

**FACULTY OF MEDICINE – SKOPJE**

**STUDIES OF GENERAL  
MEDICINE IN ENGLISH  
LANGUAGE**

## CURRICULUM OF THE STUDIES IN GENERAL MEDICINE

### I YEAR

I semester				II semester			
Subjects	Lessons	Credits	Validity exam sessions	Subjects	Lessons	Credits	Validity exam sessions
Biophysics	60	3	6	Medical chemistry	90	7	3
Cell morphology and physiology	60	5	3	Anatomy 2	90	7	3
Anatomy 1	90	9	3	Histology and embryology 2	75	6	6
Introduction to medicine	30	2	6	Health promotion	15	1	6
Medical psychology and sociology	75	5	6	Medical ethics	30	2	6
Histology and embryology 1	60	5	3	Introduction to human genetics	60	5	6
Sports and health	30	1		First aid	15	1	6
				Elective subject	15	1	
	<b>405</b>	<b>30</b>			<b>390</b>	<b>30</b>	

## II YEAR

III semester				IV semester			
Subjects	Lessons	Credits	Validity exam sessions	Subject	Lessons	Credits	Validity exam sessions
Biochemistry 1	105	7	3	Physiology 2	90	6	3
Physiology 1	150	11	3	Biochemistry 2	75	5,5	3
Introduction to immunology	45	3	6	Microbiology with parasitology 1	60	4	3
Biostatistics with medical informatics	45	3	6	Pathological physiology 1	105	7	3
Anatomy 3	90	6	3	Hygiene	75	5	6
				Basics in scientific work	30	1,5	6
				Elective subject	15	1	
	<b>435</b>	<b>30</b>			<b>450</b>	<b>30</b>	

### III YEAR

V semester				VI semester			
Subjects	Lessons	Credits	Validity exam sessions	Subjects	Lessons	Credits	Validity exam sessions
Microbiology with parasitology 2	75	6	3	Pathology 2	120	8	3
Pathological physiology 2	60	4,5	3	Clinical examination	92	7	3
Pathology 1	135	9	3	Pharmacology	105	7	3
Clinical examination	93	6	6	Epidemiology	75	5	6
Radiology	60	3	6	Transfusiology	30	2	6
Nuclear medicine	30	1,5	6	Elective subject	15	1	
	<b>453</b>	<b>30</b>			<b>437</b>	<b>30</b>	



#### IV YEAR

VII semester				VIII semester			
Subjects	Lessons	Credits	Validity exam sessions	Subjects	Lessons	Credits	Validity exam sessions
Internal medicine	205	11	6	Internal medicine	150	9,5	6
Infectiology	105	7	6	Surgery	160	9,5	6
Dermatovenerology	80	5	6	Gynecology	100	6	6
Neurology	97	6	6	Clinical pharmacology	30	1,5	3
Elective subject	15	1		Clinical biochemistry	30	1,5	3
				Oncology	45	2	6
	502	30			515	30	

## V YEAR





IX semester				X semester			
Subjects	Lessons	Credits	Validity exam sessions	Subjects	Lessons	Credits	Validity exam sessions
Surgery	175	10.5	6	Pediatrics	90	5	6
Gynecology and obstetrics	105	6	6	Psychiatry	95	5.5	6
Pediatrics	90	6	6	Otorhinolaryngology	97	6	6
Orthopedics	55	3	6	Ophthalmology	67	4	6
Anesthesiology and reanimation and pain management	40	2	6	Family medicine	30	1.5	6
Emergency medicine	30	1.5	6	Forensic medicine	75	4	6
Physical medicine and rehabilitation	15	1	6	Occupational medicine	45	2	6
				Social medicine and health economics	30	2	6
	<b>510</b>	<b>30</b>			<b>529</b>	<b>30</b>	





## VI YEAR




XI semester		XII semester	
Subjects	Duration/organization	Lessons	Credits
Internal medicine clinical practice	8 weeks	320	15
Surgery clinical practice	8 weeks	320	15
Gynecology and obstetrics clinical practice	4 weeks	160	7
Pediatrics clinical practice	3 weeks	120	6
Public health clinical practice	2 weeks	80	4
Family medicine clinical practice	1 week	40	2
Gerontology	1 week	40	2
Palliative medicine	1 week	40	2
Seminars* (3 subjects)	1 week Differential diagnosis (solving cases internal+surgery+pediatrics)	60	3
Clinical microbiology	2 days	15	1
Rational drug prescription and natural ways of healing	1 week	40	2
Elective subject		15	1
		<b>1250</b>	<b>60</b>

\*Seminars are conducted on the mentoring principle with professors and assistants. They are organized as active participation of students in the working process, participation of seminars and/or workshops, public presentations of case reports.

## *CONDITIONS FOR ADVANCEMENT*




<b>I into II semester:</b>		
<b>Signature:</b> Anatomy 1		Anatomy 2
<b>Signature:</b> Histology with Embryology 1		Histology with Embryology 2
<b>Signature:</b> Cell morphology and physiology		Introduction to human genetics
<b>Signature:</b> Introduction to medicine		Health promotion

II into III semester:		
<b>Passed exams:</b> Anatomy 1 Anatomy 2 Histology with Embryology 1		Anatomy 3 Physiology 1
<b>Passed exams:</b> Medical Chemistry		Biochemistry 1
<b>Passed exams:</b> Cell morphology and physiology		Physiology 1 Introduction to immunology
<b>Signature:</b> Introduction to human genetics		Introduction to immunology

III into IV semester:		
<b>Signature:</b> Biochemistry 1		Biochemistry 2
<b>Signature:</b> Physiology 1		Physiology 2 Pathological physiology 1
<b>Passed exams:</b> Cell morphology and physiology <b>Signature:</b> Introduction to immunology		Microbiology with parasitology 1

IV into V semester:		
<b>Passed exams:</b> Physiology 1 <b>Signature:</b> * Pathological physiology 1	→	Pathological physiology 2
<b>Passed exams:</b> Physiology 1 <b>Signature:</b> Physiology 2 Pathological physiology 1 Microbiology with parasitology 1	→	Microbiology with parasitology 2
<b>Passed exams:</b> Physiology 1 Anatomy 3 Histology and embryology 2  <b>Signature:</b> Physiology 2 Pathological physiology 1	→	Pathology 1
<b>Passed exams:</b> Physiology 1 and Anatomy 3 <b>Signature:</b> Microbiology with parasitology 1 * Pathological physiology 1	→	Clinical examination 1
Passed exams: Biophysics	→	Radiology Nuclear medicine

\* The student does not have the right to take the Pathological physiology 2 and Clinical examination exams before passing the exam of Pathological physiology 1.

V into VI semester:		
<b>Passed exams:</b> Biochemistry 1 Physiology 2 <b>Signature:</b> Pathology 1 Pathological physiology 2 Clinical examination 1		Clinical examination 2
<b>Passed exams:</b> Biochemistry 1 Physiology 2 <b>Signature:</b> Pathology 1 Pathological physiology 2		Pathology 2 Pharmacology Transfusiology
<b>Passed exams:</b> Medical statistics with informatics		Epidemiology



**VI into VII semester:**

**Passed exams:**

Introduction to medicine  
Medical psychology and sociology  
Health promotion  
Medical ethics  
First aid  
Basics in scientific work  
Introduction to human genetics  
Biochemistry 2  
Microbiology with parasitology 2  
Pathophysiology 2  
Pathology 1  
Pathology 2  
Clinical examination  
Introduction to  
immunology  
Hygiene  
Radiology  
**Signature:**  
\*Pharmacology  
Epidemiology  
Transfusiology  
Nuclear medicine



FOR ANY SUBJECT

**\* The student cannot take the Clinical Pharmacology exam before passing the Pharmacology ex**

## MANDATORY SUBJECTS

Number:1

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	ANATOMY 1			
2.	Code	MED 111			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Anatomy			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	First (I)	Semester	First (I)
7.	ECTS credits	9			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Biljana Zafirova, PhD, MD - responsible professor *Lectures held by the professors from the Department of Anatomy			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: None In order to take the final exam, the student should obtain the minimum points from the three continual assessments.			
11.	Subject program goals (competences) and study results:	<ul style="list-style-type: none"> <li>• Introduction to anatomy as a natural, morphological science and its place among the medical disciplines;</li> <li>• Introduction to osteology and syndesmology of the extremities, torso and head;</li> <li>• Introduction to the myology, angiology and neurology of extremities.</li> <li>• Detail knowing of topographical anatomy of upper and lower extremities.</li> </ul>			
12.	Subject content in details by chapters and units, with study results for every chapter	<p>The theoretical part of the course deals with the comprehensive concept of the curriculum. The practical part corresponds with the theoretical course.</p> <p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• <b>Introduction to Anatomy</b></li> <li>• <b>Upper limb</b> <ul style="list-style-type: none"> <li>– Osteology (clavicula, scapula, humerus, radius, ulna, ossa manus)</li> <li>– Syndesmology (art.humeri, cubiti, radiocarpea, artt.manus)</li> <li>– Myology (shoulder muscles, muscles of the upper arm, muscles of the forearm, muscles of the hand)</li> <li>– Arteries (a.axillaris, a.brachialis, a.ulnaris, a.radialis, arcus palmaris superficialis, arcus palmaris profundus)</li> <li>– Veins (deep veins, superficial veins)</li> <li>– Lymphatic system of the upper limb</li> </ul> </li> </ul>			

		<ul style="list-style-type: none"> <li>– Nerves (plexus brachialis)</li> <li>• <b>Lower limb</b> <ul style="list-style-type: none"> <li>– Osteology (os coxae, femur, patela, tibia, fibula, ossa pedis)</li> <li>– Syndesmology (art.coxae, genu, tibiofibularis, talocruralis, artt.pedis)</li> <li>– Myology ( thigh muscles, lower limb muscles, foot muscles)</li> <li>– Arteries (a. iliaca interna, a. femoralis, a. poplitea, a. tibialis anterior, a. dorsalis pedis, a. tibialis posterior, a. plantaris lateralis et medialis)</li> <li>– Veins (deep veins, superficial veins)</li> <li>– Lymphatic system of the lower limb</li> <li>– Nerves (plexus lumbalis, plexus sacralis)</li> </ul> </li> <li>• <b>Bones of the head</b> <ul style="list-style-type: none"> <li>– Bones of the skull (os frontale, os ethmoidale, os sphenoidale, os occipitale, os temporale, os parietale)</li> <li>– Facial bones (maxilla, os palatinum, mandibula, os zygomaticum, os nasale, os lacrimale, concha nasalis inferior, vomer, os hyoideum)</li> <li>– Skull base, cranial fossa, craniofacial cavity</li> <li>– Syndesmology (art.temporomandibularis)</li> </ul> </li> <li>• <b>Spine</b> <ul style="list-style-type: none"> <li>– Vertebrae, os sacrum, os coccygis</li> <li>– Syndesmology (juncturae columnae vertebrales, art.sacroiliaca, symphysis pubica, art. atlantooccipitalis, art. atlantoaxialis, syndesmosis occipitoaxialis)</li> </ul> </li> <li>• <b>Pelvis bones</b> <ul style="list-style-type: none"> <li>– Pelvis major, pelvis minor</li> </ul> </li> <li>• <b>Chest bones</b> <ul style="list-style-type: none"> <li>– Sternum, costae, cartilago costalis</li> <li>– Syndesmology (art. sternoclaviculares, sternocostales, synchondroses sternales and art.costovertebrales – art.capitis costae, art.costotransversaria).</li> </ul> </li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>– Practical exercises on specific bones of the extremities, the torso and the head.</li> <li>– Skeleton of the thorax, spine, pelvis and head.</li> <li>– Syndesmology of upper and lower extremities, the spine, torso and head.</li> <li>– Topographical anatomy of upper and lower extremities.</li> <li>– Regions of the arm and leg and their contents.</li> </ul>
13.	<b>Interconnection between subjects</b>	<p>Related to all subjects in the study program.</p> <p>Signature provides attendance for subject Anatomy 2</p> <p>Passed exam is precondition for exams: Anatomy 2, Anatomy 3, Physiology 1.</p>

14.	Description of the subject's study and working methods in details	Interactive teaching during lectures and practical trainings, seminars.		
15.	Total available time frame	270 classes		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	45
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	45
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	180
18.	Requirements for signature	In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper; Active participation (points) min – max Theoretical course 1-2 Practical course 4 – 6		
19.	Methods of assessment			
	19.1.	Tests: points	min – max <b>Continual assessment – 3 points 45-75</b>  1. Osteology, syndesmology, myology, angiology and neurology of the upper extremity 15-25 points 2. Osteology, syndesmology, myology, angiology and neurology of the lower extremity 15-25 points 3. Osteology and syndesmology of the axial skeleton (head, torso and spine) 15-25 points  *Each continual assessment contains written and oral part. The written part is scored from 6-10 points and the oral part from 9-15 points. The oral part contains 5 questions (each scored from 1.5-3 points) that examine the student's integrative knowledge. Osteology and syndesmology are questioned on models. The student is obligated to achieve a minimum of the intended points for each part of the assessment to pass the continual assesment. Otherwise the final exam is considered failed.	
	19.2.	Seminar paper/project, written and oral presentation: points	min – max 1 - 2	
	19.3.	Final exam: points	Practical examination  min.- max. 9 -15 points  <b>Practical examination of the final exam</b> includes topographical anatomy of upper and lower extremities on cadavers.	

			If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam with previous agreement with Department of Anatomy			
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation for the subject, teachers and associates participating in the teaching.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Drake RL, Vogl AW, Mitchell AWM	Gray`s Anatomy for Students	New York: Elsevier	2019
		2.	Halliday NL,Chung, HM.	Gross Anatomy	Pensilvania: Lippincott Williams & Wilkins	2023
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Moore KL.	Clinically oriented anatomy.	Baltimore: Lippincott Williams & Wilkins	2013
		2.	Paulsen F, Jens W.	Sobotta Atlas of Anatomy, Package, 16th ed.	Berlin: Urban & Fischer	2019

Number:2

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>CELL MORPHOLOGY AND PHYSIOLOGY</b>			
2.	<b>Code</b>	MED 112			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Physiology, Department of Histology and Embryology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	First (I)	Semester	First (I)
7.	<b>ECTS credits</b>	5			

8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Beti Dejanova, MD, PhD - responsible professor *Lectures held by all professors from the Department of Physiology, Department of Histology and Embryology
9.	<b>Language of the study</b>	English
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: None In order to take the final exam, the student has to obtain minimum points for each course attendance
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• To understand the cell structural components within morphological characteristics and physiological functions</li> <li>• To define transport mechanisms within the cell and interaction with its surrounding.</li> <li>• To understand the morphological and physiological changes during the cell division: mitosis and meiosis.</li> <li>• To learn about cell production processes and cell information processes</li> <li>• To clarify the specialized cell systems: nervous and muscle cells</li> </ul>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Basic structure and function of prokaryotic and eukaryotic cells</li> <li>• Morphological and physiological characteristics of the cell components. Changes in cell division: mitosis and meiosis.</li> <li>• Morphological specificities in different cell types</li> <li>• Cell function, transport mechanisms, cell communication with surrounding and with other cells</li> <li>• Physiological function of the cell organelles and nucleus role in transcription and replication; Cell production processes and translation</li> <li>• Cell information processes and specialized cell systems: nervous and muscle cells</li> </ul> <p><b>Practical lessons:</b></p> <ul style="list-style-type: none"> <li>• Basic structure and function of prokaryotic cells</li> <li>• Eukaryotic cells: organelles and nucleus morphology</li> <li>• Morphological characteristics of the cell in mitosis, meiosis and apoptosis</li> <li>• Morphological specificities of different cell types</li> <li>• Transport through the cell membrane</li> <li>• Functions of the cell organelles and nucleus</li> <li>• Intercellular communication and interaction</li> <li>• Specialized tissues: muscle and nerve cells</li> </ul>
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program. Signature provides attendance for Introduction to human genetics. Passed subject provides attendance to following exams: Physiology 1, Introduction to immunology, Microbiology and parasitology 1.
14.	<b>Description of the subject's study and</b>	Interactive lectures of theoretical and practical teaching, introducing computer learning by virtual models and videos.

	<b>working methods in details</b>					
15.	<b>Total available time frame</b>	150 hours				
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	34		
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	26		
		16.3.	Practice: hours			
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours	90		
18	<b>Requirements for signature</b>	The student has to obtain minimum points for each course attendance Active participation (points) min – max Theoretical course 1-3 Practical course 4–7				
	<b>Methods of assessment</b>					
	19.1.	Tests: points		min - max Cell Morphology: 25 - 40		
	19.2.	Seminar paper/project, written and oral presentation: points				
	19.3.	Final exam: points		min - max Cell Physiology: 30 - 50		
20.	<b>Grading criteria (points/grade)</b>		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	<b>Methods of monitoring the quality of the teaching process</b>		Checking the student’s attendance and student’s anonymous evaluation of the teaching process			
22.	<b>Literature</b>					
	22.1.	<b>Mandatory literature</b>				
			Author	Title	Publisher	Year
		1.	Guyton AC, Hall JE.	Textbook of Medical Physiology 14 <sup>th</sup> edition	London: Elsevier	2020
		2.	Milenkova L, Kostova N	Structural characteristics of eukaryotic cells	Skopje: UKIM, Faculty of Medicine	2011
		3.	Cooper GM. Hausman RE.	The Cell: A Molecular Approach	Boston: Sinauer Associates	2016

	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Widmaier E, Raff H, Stran K.	Vander's Human Physiology: The Mechanisma of Body Function	New York: McGraw-Hill Education	2013
		2.	www.histologyguide.com	on-line learning programme		
		3.	Ros MH, Pavlina V.	Histology, Text and Atlas	Pensilvania: Lippincott, Williams and Wilkins	2006

Number: 3

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	HISTOLOGY AND EMBRYOLOGY 1			
2.	Code	MED 113			
3.	Study Program	General Medicine			
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Histology and Embryology			
5.	Degree of education (first,second or third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	First (I)	Semester	First (I)
7.	ECTS credits	5			
8.	Professor (when more professors, responsible professor is assigned)	Associate Prof. Lena Kakasheva Mazhenkovska, PhD, MD - responsible professor *Lectures held by the professors from the Department of Medical Histology and Embryology			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Conditional criteria for assesment of knowledge: Students which have succesfully pass the continuous assesment, apply for final exam. In case the student has not achieved minimum points (60%) on each continual assessment, he/she applies to take the complete final exam. Complete final exam: The final exam is a combination of both written examinations (segments of the continuous assessments with less of 60%) and final examination. The grade for the entire exam is obtained according to the table of grades and based on			



		the sum of the points gained in all the activities including the continual assessment.
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• To get acquainted with the concept of human prenatal development.</li> <li>• To be able to define and classify the tissues.</li> <li>• To be able to stress out the functional abilities of each component of the tissue.</li> <li>• To get skills to identify the tissues on microscopic slides, to elaborate their structural components and to compare their structure.</li> </ul>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>  <b>Theoretical and laboratory practice classes:</b>	<ul style="list-style-type: none"> <li>• The structure of male and female gamete; fertilization, implantation of the conceptus.</li> <li>• Pre-embryonic period, (embryogenesis), embryonic period (organogenesis), fetal period.</li> <li>• Structure and function of placenta and of embryonic sac.</li> <li>• Disturbances of the prenatal development and origin of the congenital anomalies.</li> <li>• Microscopic slides, microscope, tissues.</li> <li>• Structural characteristics and types of epithelial, connective, cartilaginous, bone, muscle and nerve tissues.</li> <li>• Histological characteristics of the: bones and junctions, heart, blood and lymphatic vessels, lympho-epithelial and lympho-reticular organs.</li> <li>• Embryonic development and origin of the congenital anomalies of cardiovascular and skeletal system.</li> </ul>
13.	<b>Interconnection between subjects</b>	<p>Related to all subjects in the study program</p> <p>Signature from this subject provides attendance for Histology and embryology 2</p> <p>Passed subject provides attendance to following exams: Anatomy 3, Physiology 1</p>
14.	<b>Description of the subject's study and working methods in details</b>	<ul style="list-style-type: none"> <li>• Through visual presentation during accentuated concept lectures, study-goal oriented learning and interactive teaching.</li> <li>• Through power point, video presentations and other aids during laboratory practice classes.</li> </ul>

			<ul style="list-style-type: none"><li>• Through video-presentation and individual examination of microscopic slides.</li><li>• Through student presentations and open discussions during seminars.</li><li>• Through learning from recommended literature and selected files available on the web site of the Institute of histology and embryology.</li></ul>
15.	Total available time frame:		150 school hours
16.	Forms of teaching activities	16.1.	Lectures - theoretical lessons, hours 30
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours 30
		16.3.	Practice: hours
17.	Other forms of activities	17.1.	Projects tasks: hours
		17.2.	Individual tasks: hours
		17.3.	Studying at home learning 90
18.	Requirement for signature	Conditional criteria for signature: To take active participation in all the teaching activities including continuous assessments.  Active participation (points) min – max Theoretical course 1-3 Practical course 5–7	
19.	Method of assessment		
	19.1	Tests: points	Continual assessment:  1. Written: Prenatal development, placenta, causes and consequences of the developmental disturbance 12-20 points  2. Written: Tissue structure 12-20 points 3. Laboratory practice: Microscopic slides from different tissues 9 -15 points
	19.2	Seminar paper/project, written and oral presentation: points	/
	19.3	Final exam:	Lymphoid organs, skeletal system and cardio-vascular system (histology and embryology) 1. Laboratory practice: Microscopic slides of lymphoid organs, bone, heart, blood vessels and lymphatic vessels (7 – 12 points)

			2. Oral: Lymphoid organs, skeletal system and cardiovascular system (histology and embryology) (14 – 23 points)			
20.	Grading criteria (points / grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Method of monitoring the quality of teaching process		Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Ross MH, Wojciech P	Histology, Text and atlas	Philadelphia:L ippincott, Williams and Wilkins	2023
		2.	Junqueira JK, Carneiro H	Basic histology, Text and atlas	Chicago: McGraw Hill	2021
		3.	Moore KL, Persaud TVN	The developing human Clinically oriented embryology	Mumbai: Elsevier	2012
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Department of histology and embryology	Study guide for Histology & embryology 1	http://medf.uki m.edu.mk/	2017
		2.	Milenkova L, Kostovska N.	Opsta embriologija na covekot (General human embryology)	Mariv	2009
		3.	Kostovska N, Milenkova L.	Histologija - Gradba na tkivata (Histology - tissue structure)	Mariv	2009
		4.	www.histologyguide.com	on-line learning programme		
		5.	www.biolucida.com	on-line learning programme		

Number: 4

1.	<b>Subject</b>	<b>MEDICAL PSYCHOLOGY AND SOCIOLOGY</b>			
2.	<b>Code</b>	MED 114			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Anatomy			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year study			
6.	<b>Academic year/semester</b>	Year	First (I)	Semester	First (I)
7.	<b>ECTS credits</b>	5			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Slavica Arsova Hadji-Angjelkovska, PhD, MD - responsible professor *Lectures held by professors from the Department of Psychiatry and Medical Psychology			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: None The student is obligated to achieve a minimum of the intended points for each test or directly attend the final exam.			
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>To introduce students with the basics of Medical Psychology and Medical Sociology: (basic concepts, psychological processes, psychological factors in health and illness)</li> <li>To enable the students to develop communication skills, establishing contact with the patient and the practical application of these skills</li> <li>To provide skills and knowledge for applying biopsychosocial approach to diagnosis and treatment of patients</li> <li>To provide skills and knowledge for exploring social determinants of health and the meaning of health and illness in the social context</li> </ul>			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> Psychological processes across the life span <ul style="list-style-type: none"> <li>Consciousness and sleep – levels of awareness</li> <li>Senses and perception – the interpretation of sensory stimuli</li> <li>Attention – selection of information, planning</li> <li>Cognitive development – the changes in the capacities of the individual as a function of age and experience from birth to adulthood</li> <li>Cognitive aspects of ageing – the changes as a function of age and experience during later life</li> <li>Socio-emotional relationship across the life span</li> <li>Attachment</li> </ul>			

		<ul style="list-style-type: none"> <li>• Learning – interaction with the environment, stable change in behavior or understanding</li> <li>• Memory – the cognitive processes of encoding, storing and retrieving information as a function of age</li> <li>• Language and speech</li> <li>• Development and personality structure, theories of personality development</li> <li>• Psychological defense mechanisms and their function</li> </ul> <p>Psychological factors in health and illness</p> <ul style="list-style-type: none"> <li>• Biological basis of behavior (genes and behavior)</li> <li>• Mental health and mental illness</li> <li>• Psychological factors in health promotion and illness prevention</li> </ul> <p>Psychological interventions – interventions to change behavior, modify risk, and improve outcomes</p> <ul style="list-style-type: none"> <li>• Psychological processes in disease – pathways and mechanisms from psychological states to disease end points</li> <li>• Psychological aspects of pain</li> </ul> <p>Psychological responses to illness</p> <ul style="list-style-type: none"> <li>• Emotional, cognitive and behavioral responses to illness</li> <li>• Coping with illness – adjusting behavior or thoughts to reduce effects of an acute or chronic illness</li> <li>• Psychological stress and trauma</li> <li>• Death, dying and bereavement</li> <li>• Burn out syndrome</li> </ul> <p>Psychological counselling</p> <p>Social determinants of health and illness:</p> <ul style="list-style-type: none"> <li>• Social norms, social biography, healthy lifestyles, self-care</li> <li>• Social structure, social inequalities, social stress and coping</li> <li>• Violence and health: ecological model, risk and protective factors</li> <li>• Social change and the meaning of gender, sexuality, suicide, mental illness, disability, death</li> </ul> <p><b>Practical course:</b></p> <p>Human communication and communication skills training</p> <ul style="list-style-type: none"> <li>• Meaning of communication</li> <li>• Interaction doctor-patient: compliance, health education and difficulties in communication</li> <li>• Leadership and teamwork</li> <li>• Social processes shaping professional behavior</li> <li>• Psychological response to illness</li> <li>• Response of the patient to the illness</li> <li>• Response of an ill child</li> <li>• Patient with acute illness</li> </ul>
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		<ul style="list-style-type: none"> <li>• Patient with chronic illness</li> <li>• Psychological profile of the personality of the patient</li> </ul>
13.	<b>Interconnection between subjects</b>	Connected to all subjects of the study programme. Precondition for entrance in VII semester
14.	<b>Description of the subject's study and working methods in details</b>	Interactive lectures, tutorials / workshops, seminars
15.	<b>Total available time frame</b>	Hours 150
16.	<b>Forms of teaching activities</b>	16.1. Lessons – theoretical lessons, hours 38
		16.2. Practical lessons (laboratory, auditory), seminars, team work: hours Practical lessons 28 Seminars 9
		16.3. Practice: hours
17.	<b>Other forms of activities</b>	17.1. Project tasks: hours
		17.2. Individual tasks: hours
		17.3. Studying at home: hours 75
18.	<b>Requirements for signature</b>	In order to get a signature, the student should obtain minimum points in both theoretical and practical courses and seminars Active participation (points) min – max Theoretical course 1-3 Practical course 6-7
19.	<b>Methods of assessment</b>	
	19.1. Tests: points	min.-max. Continual assessments -2 total 48-80 points <ul style="list-style-type: none"> <li>• Test 1 24– 40 points</li> <li>• Test 2 24 – 40 points</li> </ul> The student is obligated to achieve a minimum of the intended points for each test, otherwise they should directly attend the final exam.
	19.2. Seminar paper/project, written and oral presentation: points	min.-max. Seminar works 5-10 points
	19.3. Final exam: points	min.-max. 48-80 points The continuous knowledge assessment is not obligatory, the student may directly attend the final exam. Passed first test is a precondition to attend the second exam. Students who have passed both tests are not attending the final exam. Student who hasn't passed the first test or haven't attended the first test are obliged to attend the final exam. Assessment of the overall performance is obtained based on the sum of points from overall activities, including the tests or the final exam.
20.	<b>Grading criteria (points/grade)</b>	Up to 59 points 5 (five) (F)
		From 60 to 68 points 6 (six) (E)

		From 69 to 76 points		7 (seven) (D)		
		From 77 to 84 points		8 (eight) (C)		
		From 85 to 92 points		9 (nine) (B)		
		From 93 to 100 points		10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process	Student anonymous evaluation for the subject, teachers and associates participating in the teaching.				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Pedersen SS	Textbook of Applied Medical Psychology: A Multidisciplinary Approach	Odense: Syddansk Universitetsforlag	2022
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Sarkanjac B, Stefan Kostovski S	Sociology of Health and Illness	Skopje: UKIM, Faculty Philosophy	2010
		2.	Chadlovski G, Filipovska A, Belevska D.	Medical Psychology	Prosvetno Delo, Skopje	2004

Number:5

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>INTRODUCTION TO MEDICINE</b>			
2.	<b>Code</b>	MED 115			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Social Medicine			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	First (I)	Semester	First (I)
7.	<b>ECTS credits</b>	2			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Mome Spasovski, MD PhD - responsible teacher *Teaching is conducted by all the teachers of the Department of Social Medicine			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes</b>	Preconditions for attending the classes: None			

	<b>and taking the subject's exam</b>	In order to take the final exam the student should pass the predicted continuous assessment and to achieve at least 60% of the total number of points for continuous assessment
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<p>Teaching goals of this subject are to improve the knowledge of the student and to become familiar with:</p> <ul style="list-style-type: none"> <li>• the basic principles and tasks of medicine.</li> <li>• the history of medicine and public health.</li> <li>• character and importance of the medical professions, principles and levels of organization of health care.</li> <li>• health and disease and levels of prevention.</li> <li>• basic characteristics and prevention of certain diseases and groups of diseases</li> </ul>
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <p>Chapter 1: Medicine as science</p> <p>1. Medicine</p> <p>Study results of the chapter: The student to be able to understand the following concepts:</p> <ul style="list-style-type: none"> <li>• Definition, tasks, and division of medicine;</li> <li>• Natural scientific basis of medicine;</li> <li>• Development of modern medicine;</li> </ul> <p>Chapter 2: History of medicine</p> <p>2. Early beginnings of Medicine</p> <p>Study results of the chapter: The student will be able to gain knowledge on:</p> <ul style="list-style-type: none"> <li>• Retrospective development of medicine and public health through the centuries;</li> <li>• The history of medicine as a science and practice in Macedonia;</li> </ul> <p>Chapter 3: Medical Education</p> <ul style="list-style-type: none"> <li>• Concept, development and reforms in the medical education</li> <li>• The Medical Education and Medical Faculties in Macedonia</li> <li>• Medical Specializations</li> </ul> <p>Study results of the chapter: The student will have improved knowledge on the following concepts:</p> <ul style="list-style-type: none"> <li>• Medical Education, Edinburgh declaration;</li> <li>• Medical professions - legislative and ethical aspects;</li> <li>• Medical and other professions;</li> <li>• Internship and professional exam;</li> <li>• Specializations and sub-specializations.</li> </ul> <p>Chapter 4: Health and Disease</p> <ul style="list-style-type: none"> <li>• Definition and theoretical conceptualization on health</li> <li>• Determinants of health</li> <li>• Diseases: general characteristics</li> <li>• Concepts of diagnosis, therapy and management of diseases</li> <li>• Health promotion and levels of prevention</li> </ul>



		<p>Study results of the chapter: The student will be able to define health, disease and what predefines the health status of the individual and the population; especially about the social determinants of health and the basic principles on how these factors are address in preventive medicine practice. Moreover, the student will be introduced to the basic principle of clinical medicine and examination.</p> <p>Chapter 5: Health care</p> <ul style="list-style-type: none"> <li>• Definition and concept of health care</li> <li>• Principles of health care organization</li> <li>• Levels of health care</li> <li>• Concept of healthcare system</li> <li>• The organization of health care and the health care system in N. Macedonia</li> </ul> <p>Study results of the chapter: The student will be introduced to the basic concepts of health care and healthcare system and to better understand her/his the future profession, recognized different healthcare institutions and types of services.</p> <p>Chapter 6: Ethics in Medicine</p> <ul style="list-style-type: none"> <li>• Ethics, Medical Ethics and Bioethics: definitions and basic principles</li> <li>• Development of ethics in medicine</li> <li>• Ethical dilemmas and challenges in modern medicine;</li> <li>• Doctor-Patient Relationship: ethical principles and models</li> <li>• Medical Deontology;</li> <li>• Hippocrates oat</li> <li>• Patient rights</li> </ul> <p>Study results of the chapter: The student will be prepared on the conditions and values of being a medical student and doctor. It will empower the student to critical thinking and recognizing ethical dilemmas and values in medical education, research and practice. Also, this chapter by emphasizing on doctor-patient relationships and patients right will improve the students' communication skills, both verbal and non-verbal, empathy thought role play on theoretical and practical lessons.</p> <p><b>Practical course:</b></p> <p>Chapter 1: Health and Healthcare</p> <ol style="list-style-type: none"> <li>1. Health Evaluation;</li> <li>2. Health Indicators;</li> <li>3. Database for health indicators and indicators of health care.</li> </ol> <p>Study results of the chapter: The student will be able to:</p> <ul style="list-style-type: none"> <li>• Independently use the databases of health and health care indications by defining goals, indicators, search and presentation of results;</li> <li>• Interpret data and to evaluate the health status of the population and different population groups;</li> <li>• Define and recognize a health problems in the communities;</li> </ul>
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		<p>Chapter 2: Medical Ethics</p> <ul style="list-style-type: none"> <li>• Case studies: ethical principles;</li> <li>• Case studies: medical professionalism;</li> <li>• Case studies: Tuskegee Study.</li> </ul> <p>Study results of the chapter:</p> <p>Through mix classroom discussion and assignments using the method of case studies, real-life scenarios and assignments the students can better understand the importance of values and ethical principles and the consequences of non-ethical conduct in medicine. Moreover, the practical lessons will empower the student for critical thinking and professionalism during the studies and future profession.</p> <p>Chapter 3: Academic Writing</p> <ul style="list-style-type: none"> <li>• Writing a seminar paper: basic principles;</li> <li>• Practical application of academic writing.</li> </ul> <p>Study results of the chapter:</p> <p>The student will gain practical skills in academic writing, from basic concepts, reading and recognizing scientific papers to writing up a seminar academic paper. Also, apart from writing skills, the group project task will help the student to develop communication and teamwork skills, giving and receiving feedback, and presenting skills.</p>		
13.	<b>Interconnection between subjects</b>	<p>Related to all subjects in the study program.</p> <p>Signature from this subject provides attendance for Health Promotion.</p> <p>Passed subject provides attendance to VII semester</p>		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive lectures, exercises, seminars and field practical work		
15.	<b>Total available time frame</b>	60 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	15 hours
		16.2.	Practical lessons, seminars, team work: hours	15 hours
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	30 hours
18.	<b>Requirements for signature</b>	<p>To get a signature the student is required to attend the theoretical, practical training and seminars and to achieve minimum points to access the final exam .</p> <p>To access to the final exam the student should pass the predicted continuous assessment and to achieve at least 60% of the total number of points for continuous assessment, whereby in the exam session first takes the unpassed continuous checks, then comes to the final exam.</p> <p>The grade of the subject is formed in accordance with the table of grades, based on the sum of points from all activities, continuous assessment and final exam.</p>		

19.	Methods of assessment					
	19.1.	Tests: points		Min-max	18-30	
	19.2.	Seminar paper/project, written and oral presentation: points		Min-max	6-10	
	19.3.	Final exam: points		Min-max Theoretical course Practical course	30-50 3-5 3-5	
20.	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities			
22.	Literature					
	22.1.	Mandatory literature				
			Author	Title	Publisher	Year
		1.	Seturaman KP.	Communication skills in clinical practice	Skopje: Tabernakul	2010
		2.	Spasovski M, Tozija F, Kjosevska E. at al.	Introduction to medicine	Skopje: Ss Cyril and Methodius University, Faculty of Medicine	2023
		3.	Tulchinsky T, Varavikova E, Cohen MJ.	The New Public Health. 4 <sup>th</sup> Edition	New York: Elsevier	2023
		22.2.	Additional literature			
			Author	Title	Publisher	year
	1.		Tozija F, Spasovski M, Kjosevska E, at al.	Introduction to medicine Handbook	Skopje: Ss Cyril and Methodius University, Faculty of Medicine	2023

Number:6

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>	
1.	<b>Subject</b>	<b>BIOPHYSICS</b>	
2.	<b>Code</b>	MED-116	
3.	<b>Study program</b>	General Medicine	
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Biophysics	

5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	First (I)	Semester	First (I)
7.	ECTS credits	3			
8.	Professor (when more professors, responsible professor is assigned)	Assoc. Prof. Tomislav Stankovski, PhD, MD - responsible professor *Lectures held by the professors from the Department of Biophysics			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: None In order to take the final exam, the student should obtain the minimum points in the theoretical and practical part of the course.			
11.	Subject program goals (competences) and study results:	<ul style="list-style-type: none"> <li>• To learn the basic laws of Physics applied in Medicine;</li> <li>• To understand the processes of the living organisms that can be described by the Biophysics models;</li> <li>• To learn the basic laws of mechanics, fluids, acoustics, optics and thermodynamics;</li> <li>• To learn about the electrical and magnetic forces, as well as their occurrence and application in living organisms;</li> <li>• To learn the basic characteristics of Non-ionizing and Ionizing radiation and their use in Medicine.</li> <li>• To learn the physics background of medical diagnostic methods</li> <li>• To learn the physics background of medical therapy procedures</li> </ul>			
12.	Subject content in details by chapters and units, with study results for every chapter	<p><b>Contents of the study program:</b></p> <ul style="list-style-type: none"> <li>• Biophysics basics and system theory</li> <li>• Biomechanics</li> <li>• Biophysics of fluids</li> <li>• Periodic motion, oscillations and waves</li> <li>• Bioacoustics</li> <li>• Optics</li> <li>• X-ray and nuclear radiation</li> <li>• Thermodynamics</li> <li>• Electrical forces</li> <li>• Electromagnetism</li> </ul> <p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Biophysics basics. Divisions in Biophysics. System theory. System control. Important theories.</li> <li>• Basics of biomechanics. Levers of the locomotor system. Work and power of the man. Mechanical work of the heart. Elasticity. Bone fractures.</li> <li>• Fluids and their characteristics. Liquid viscosity. Hydrodynamics. Breathing as exchange of fluid gases. Physical model of the blood vessels. Surface</li> </ul>			

		<p>tension of liquids. Atmospheric pressure. Mechanics of breathing.</p> <ul style="list-style-type: none"><li>• Bioacoustics. Oscillations and waves. Sounds waves. Physics of ear and speech system. Ultrasound. Application of sound in Medicine.</li><li>• Basic geometric laws in optics. Optical instruments. Eye as an optical instrument. Infrared light. NIRS method. Thermography. Ultraviolet light. Quantum optics. Lasers. RF and microwave ablation.</li><li>• X-ray radiation. X-ray spectra. Application of X-ray in Medicine. Computer Tomography. Nuclear physics and nuclear reactions. Physics of Nuclear Medicine basics. SPECT and PET methods. Hybrid SPECT-CT methods. Radiotherapy. Physics of radiotherapy.</li><li>• Thermodynamic processes. Biological open systems. Physiological effect of heat on human body.</li><li>• Electrical forces. Electrostimulation. Heart Bypass. Biopotentials and electrophysiology. Electromyography. Electroencephalography.</li><li>• Basics of electromagnetism. Electromagnetic induction. Magnetic resonance.</li><li>• Systematic overview of medical diagnostic methods from physics perspective.</li><li>• Signal and digital image processing methods.</li></ul> <p><b>Practical lab courses:</b></p> <ul style="list-style-type: none"><li>• Focal distance in optical lens.</li><li>• Concentration measurement with Abbe refractometer.</li><li>• Ultrasound waves.</li><li>• Biopotentials and electromyography.</li><li>• Cardio-respiratory oscillations.</li></ul>	
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program. Passed subject provides attendance to following exams: Radiology, Nuclear Medicine	
14.	<b>Description of the subject's study and working methods in details</b>	Theoretical lectures and lab experiments	
15.	<b>Total available time frame</b>	90 hours	
16.	<b>Forms of teaching activities</b>	16.1. Lessons – theoretical lessons, hours	45 hours
		16.2. Practical lessons (laboratory, auditory), seminars, team work: hours	15 hours
		16.3. Practice: hours	/
17.	<b>Other forms of activities</b>	17.1. Project tasks: hours	/
		17.2. Individual tasks: hours	/
		17.3. Studying at home: hours	30 hours
18.	<b>Requirements for signature</b>	Only two absences from the lab experiments are permitted for obtaining a signature. The two continuous tests are taken only during the lectures, after that one needs to go to the full exam. The written and the oral test are taken either during the lectures	

		or on the full final exam. In either case, to pass the subject one needs to get at least the minimum required points. Based on the acquired points, the grade is formed according to the table of grades (given above).				
19.	<b>Methods of assessment</b>					
	19.1.	Tests: points		2 Continuous tests 36 - 60 points		
	19.2.	Seminar paper/project, written and oral presentation: points		Oral (written) exam 18 – 30 points Lab activity 6 - 10 points		
	19.3.	Final exam: points		60-100 points		
20.	<b>Grading criteria (points/grade)</b>		Up to 59 points		5 (five) (F)	
From 60 to 68 points			6 (six) (E)			
From 69 to 76 points			7 (seven) (D)			
From 77 to 84 points			8 (eight) (C)			
From 85 to 92 points			9 (nine) (B)			
From 93 to 100 points			10 (ten) (A)			
21.	<b>Methods of monitoring the quality of the teaching process</b>		Anonymous evaluation taken by the students, of the subject, teachers and collaborators involved in the educational activities			
22.	<b>Literature</b>					
	22.1.	<b>Mandatory literature</b>				
		Number	Author	Title	Publisher	Year
		1.	Brown BH, Smallwood RH, Barber DC, Lawford PV, Hose DR.	Medical physics and biomedical engineering.	Boca Raton: CRC Press	1998
		2.	Bialek W	Biophysics: Searching for Principles	Princeton: Princeton University Press	2012
	22.2.	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Stankovski T.	Tackling the inverse problem for non-autonomous systems: Application to life sciences	Berlin: Springer	2013
			2.	Stankovski T	Biophysics – internal materials	Skopje: Ss Cyril and Methodius University, Faculty of Medicine

		3.	Andonovska N	Biophysics	Skopje: Ss Cyril and Methodius University	2005
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Number:7

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	SPORT AND HEALTH			
2.	Code	MED 118			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of physical education, sport and health, Department of physical education, sport and sports management			
5.	Degree of education (first, second, third cycle)	Integrated 6-year study			
6.	Academic year/semester	Year	First (I)	Semester	First (I)
7	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Slavica Novachevska, PhD - responsible professor			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: None If the student does not fulfill the obligations of the practical part of the course, he attends to the final test.			
11.	Subject program goals (competences) and study results:	The purpose of the Sport and Health subject is for students to acquire by adopting new and improving old motor knowledge and skills, improving motor, morphological and functional abilities with the aim of improving health, satisfying movement needs, enabling the student to rationally, meaningful and purposeful use of free time as well as improving the quality of life in youth, adulthood and old age. Acquiring knowledge about the structure, rules and principles of the training process and the specifics of the training activity.			
12.	Subject content in details by chapters and units, with study results for every chapter	A. Program - basic regular program - basketball, volleyball, handball, futsal, development of motor skills, dance fitness programs (aerobics, step aerobics, pilates, etc.), B. Program-elective teaching (self-financing)-swimming, skiing, hiking, camping, cycling, rollerblading, fitness, tennis, ice skating. C. Program for students with special needs (Physical activities depending on the student's diagnosis) G. Program - sports competitions (Faculty and University sports competitions)			

13	Interconnection between subjects	Related to all subjects in the study program.				
14.	Description of the subject’s study and working methods in details	Lectures, presentations, discussions, demonstrations, practical exercise (analytical, synthetic and complex). Under methods we use laboratory method, practical method, individual, frontal and group method.				
15.	Total available time frame	30 hours				
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	2 hours		
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	Practical lessons 24 hours Seminars 4 hours		
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours			
18.	Requirements for signature	Minimum 60% attendance of the classes				
19.	Methods of assessment					
	19.1.	Exercises during practical course: points			60 points	
	19.2.	Seminar paper/project, written and oral presentation: points			40 points	
	19.3.	Final exam: points			100 points	
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Setting goals, setting standards, assessing achievement of standards, communication and reporting on achievements, accountability, support and intervention.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Chandler T, Mike Cronin M, Vamplew W	Sport and physical education- The key concepts	London: Routledge	2007



		2.	Freeman WH.	Physical Education, Exercise and Sport Science in a Changing Society	Burlington: Jones & Bartlett Publishers	2013
		3.	Thorpe D, Buti A, Jonson P, Anderson J	Sports Law eBook Fourth Edition	Oxford University Press	2022
	22.2.	<b>Additional literature</b>				
		Number	Author	Title	Publisher	Year
		1.	Shukova Stojmanovska D	Physiological hygiene and health education and sport	Kocani : “Evropa 92”	2022
		2.	Markovski N, Tasevski Z	Football	Skopje: Bomat Grafiks	2021
		3.	Naumovski M, Daskalovski B	Theoretical basis of basketball	Skopje: Gogo Prom	2016

Number:8

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>ANATOMY 2</b>			
2.	<b>Code</b>	MED 121			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Medical Faculty, Department of Anatomy			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	First (I)	Semester	Second (II)
7	<b>ECTS credits</b>	7			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Biljana Zafirova, PhD, MD - responsible professor *Lectures held by all professors from the Department			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Precondition for attending the classes is signature from Anatomy 1. Preconditions for taking the subject's final exam are passed Anatomy 1 and passed all of the three continual assessments of Anatomy 2.			

11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• Introduction to the descriptive and topographical anatomy of the thoracic, abdominal and pelvic walls;</li> <li>• Introduction to the topography of the thoracic, abdominal and pelvic cavity;</li> <li>• Introduction to the morphology, the structure and the syntopic, skeletotopic and holotopic relations of the thoracic, abdominal and pelvic cavity contents.</li> </ul>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p>The theoretical part of the course deals with the comprehensive concept of the curriculum. The practical part corresponds with the theoretical course.</p> <p><b>Theoretical lessons:</b></p> <ol style="list-style-type: none"> <li><b>1. General characteristics of the chest</b></li> <li><b>2. Chest walls</b> <ul style="list-style-type: none"> <li>– Skin and soft tissues</li> <li>– Chest wall muscles (anterolateral muscles, back muscles, diaphragma)</li> <li>– N. phrenicus</li> <li>– Vascularization and lymphatic drainage (arteries, veins, lymphatic system of the chest wall)</li> <li>– Nerves of the chest wall</li> <li>– Breast (mamma)</li> </ul> </li> <li><b>3. Chest cavity (cavitas thoracis)</b> <ul style="list-style-type: none"> <li>– Arterial vessels of the chest cavity (aorta, truncus pulmonalis)</li> <li>– Veins of the chest cavity (v. cava superior, v. cava inferior, azygous vein system)</li> <li>– Autonomic nervous system of the chest cavity (truncus sympathicus thoracalis, n.vagus)</li> <li>– Lymphatic drainage (ductus thoracicus)</li> <li>– Thymus</li> <li>– Thoracic part of the esophagus</li> </ul> </li> <li><b>4. Respiratory system (apparatus respiratorius)</b> <ul style="list-style-type: none"> <li>– Pulmones, pleura, trachea, bronchus principalis</li> </ul> </li> <li><b>5. Cardiovascular system</b> <ul style="list-style-type: none"> <li>– Cor, pericardium</li> </ul> </li> <li><b>6. Surface anatomy of the chest and projections</b></li> <li><b>7. Introduction to abdominal anatomy</b></li> <li><b>8. Abdominal walls</b> <ul style="list-style-type: none"> <li>– Abdominal wall muscles (anterolateral muscles and posterior abdominal wall muscles)</li> <li>– Weak spots on the anterolateral wall (canalis inguinalis, annulus femoralis, annulus umbilicalis)</li> <li>– Weak spots on the posterior wall (trigonum lumbale- Petit, quadrilaterum Grynfelti)</li> <li>– Arterial vessels of the abdomen (aorta abdominalis and it's branches)</li> <li>– Abdominal veins (v.cava inferior, v.portae)</li> <li>– Lymphatic system of the abdomen</li> <li>– Abdominal nerves (plexus lumbalis, plexus celiacus)</li> </ul> </li> </ol>

		<p><b>9. Abdominal cavity</b></p> <ul style="list-style-type: none"> <li>– Peritoneum, cavitas peritonealis abdominis: general characteristics and overview</li> </ul> <p><b>10. Abdominal organs</b></p> <ul style="list-style-type: none"> <li>– Esophagus, ventriculus s. gaster, intestinum tenue (duodenum, jejunum, ileum), intestinum crassum (cecum, colon), hepar, hepatobiliary system, pancreas, lien</li> </ul> <p><b>11. Spatium retroperitoneale: general characteristics and overview</b></p> <ul style="list-style-type: none"> <li>- Ren, gl.suprarenalis, abdominal part of the urinary tract</li> </ul> <p><b>12. Introduction to pelvic anatomy (pelvic cavity- major and minor)</b></p> <p><b>13. Pelvic walls and cavity</b></p> <ul style="list-style-type: none"> <li>– Pelvic muscles, pelvic floor muscles (diaphragma pelvis)</li> <li>– Pelvic fascia and pelvic urogenital peritoneum</li> <li>– Anatomical spaces in the pelvic cavity</li> <li>– Vascularization (a. iliaca interna, v. iliaca interna)</li> <li>– Pelvic lymphatic drainage</li> <li>– Innervation (n. pudendus, plexus coccygeus, plexus hypogastricus inferior -plexus pelvici)</li> </ul> <p><b>14. Perineum</b></p> <ul style="list-style-type: none"> <li>– Muscles and fascia of the perineum</li> <li>– (trigonum anale – fossa ischioanalis, trigonum urogenitale – membrana perinei and spaces)</li> <li>– Vascularization and lymphatic drainage</li> <li>– Innervation of the perineum</li> </ul> <p><b>15. Pelvic organs</b></p> <ul style="list-style-type: none"> <li>– Pelvic part of the urinary tract: pelvic part of the ureter, vesica urinaria, prostate, urethra masculina, urethra feminina.</li> <li>– Male reproductive organs (testis, epididymis, ductus deferens, funiculus spermaticus, paradidymis, ductus ejaculatorius, accessory glands of the male reproductive system, external male genitalia)</li> <li>– Female reproductive organs (vulva, vagina, uterus, tuba uterina, ovarium)</li> <li>– Pelvic part of the digestive system: rectum, canalis analis</li> </ul> <p><b>Practical part:</b></p> <p>Practical exercises on cadavers, or more specific:</p> <ul style="list-style-type: none"> <li>– Regions of the thorax with the organs in the thoracic cavity.</li> <li>– Regions of the abdomen with the organs in the abdominal cavity.</li> <li>– Regions of the pelvis with the organs in the pelvic cavity.</li> <li>– Learning the morphology, structure, syntopic, skeletotopic and holotopic relationships of the organs in the thoracic, abdominal and pelvic cavity by practical exercises on cadavers and fixed specimens.</li> </ul>
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program

		Passed subject provides attendance to following exams: Anatomy 3 and Physiology 1.		
14.	Description of the subject's study and working methods in details	Interactive teaching during lectures and practical trainings, seminars.		
15.	Total available time frame	210		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	45
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	45
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	120
18.	Requirements for signature	<p>In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper</p> <p>Active participation (points)</p> <p>Theoretical course                      min – max              1 - 2 points          Practical course                          4 – 6 points</p>		
19.	<b>Methods of assessment</b>			
	19.1.	Tests: points	<b>Continual assessment of knowledge - 3</b> 1. Thorax 2. Abdomen 3. Pelvis  *Each continual assessment contains written and oral part. The written part is scored from 6-10 points and the oral part from 9-15 points. The oral part contains 5 questions ( each scored from 1.5-3 points) that examine the student's integrative knowledge. The student is obligated to achieve a minimum of the intended points for each part of the assessment to pass the continual assesment.	min – max 45-75 15 -25 points 15 - 25 points 15 - 25 points
	19.2.	Seminar paper/project, written and oral presentation: points		min – max 1 - 2
	19.3.	Final exam: points	*Practical examination	min - max 9-15 points

			<b>*Practical examination of the final exam</b> contains region of the thorax, abdomen and pelvis, performed on cadavers and fixed organs.			
20.	<b>Grading criteria (points/grade)</b>	Up to 59 points			5 (five) (F)	
		From 60 to 68 points			6 (six) (E)	
		From 69 to 76 points			7 (seven) (D)	
		From 77 to 84 points			8 (eight) (C)	
		From 85 to 92 points			9 (nine) (B)	
		From 93 to 100 points			10 (ten) (A)	
21.	<b>Methods of monitoring the quality of the teaching process</b>	Student anonymous evaluation for the subject, teachers and associates participating in the teaching.				
22.	<b>Literature</b>					
	22.1.	<b>Mandatory literature</b>				
		Number	Author	Title	Publisher	Year
		1.	Drake RL, Vogl AW, Mitchell AWM	Gray`s Anatomy for Students	New York: Elsevier	2019
		2.	Halliday NL,Chung, HM.	Gross Anatomy	Pensilvania: Lippincott Williams & Wilkins	2023
	22.2.	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Moore KL.	Clinically oriented anatomy.	Baltimore: Lippincott Williams & Wilkins	2013
		2.	Paulsen F, Jens W.	Sobotta Atlas of Anatomy, Package, 16th ed.	Berlin: Urban & Fischer	2019

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Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	HISTOLOGY AND EMBRYOLOGY 2			
2.	Code	MED 122			
3.	Study Program	General Medicine			
4.	Institution (Unit, Institute, Chair, Department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Histology and Embryology			
5.	Degree of education (first,second or third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	First (I)	Semester	Second (II)

7.	ECTS credits	6
8.	Professor (when more professors, responsible professor is assigned)	Assoc. Prof. Lena Kakasheva Mazhenkoska PhD, MD - responsible professor *Lectures held by the professors from the Department of Medical Histology and Embryology
9.	Language of the study	English
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: Signature from Hystology and Embriology 1 In order to take the final exam, the student should obtain the minimum points from the continual assessments.
11.	Subject program goals (competences) and study results:	<ol style="list-style-type: none"> <li>1. Acquiring skills of analysing histology microscopic slides and precise identification of structural components of tissues and organs</li> <li>2. Acquiring ability of comprehension of: <ul style="list-style-type: none"> <li>- specific combination of tissues in each organ;</li> <li>- crucial components of organs;specific structural properties determining basic organ function;</li> <li>- role of additional (supporting) structural and functional components.</li> </ul> </li> <li>3. Acquiring ability to present comprehension of origin and organ development;</li> <li>4. Acquiring basic ability to make causal-consequential connection between potential disruption of organ development and type of resulting congenital anomaly.</li> </ol>
12.	Subject content in details by chapters and units, with study results for every chapter  Theoretical and laboratory practice classes:	<ul style="list-style-type: none"> <li>• Microscopic structure, embryonic development, concept of origin of congenital malformations of organ systems</li> <li>• Gastrointestinal system,</li> <li>• Urinary system,</li> <li>• Genital system,</li> <li>• Respiratory system,</li> <li>• Endocrine system,</li> <li>• Central nervous system,</li> <li>• Skin</li> <li>• Sensory organs.</li> </ul>
13.	Interconnection between subjects	Related to all subjects in the study program Passed subject provides attendance to following exams: Pathology 1.
14.	Description of the subject's study and working methods in details	<ul style="list-style-type: none"> <li>• Through visual presentation during accentuated concept lectures, study-goal oriented learning and interactive teaching.</li> </ul>

		<ul style="list-style-type: none"><li>• Through power point, video presentations and other aids during laboratory practice classes.</li><li>• Through video-presentation and individual examination of microscopic slides.</li><li>• Through student presentations and open discussions during seminars.</li><li>• Through learning from recommended literature and selected files available on the web site of the Institute of histology and embryology.</li></ul>		
15.	<b>Total available time frame:</b>		180 school hours	
16.	<b>Forms of teaching activities</b>	16.1.	Lectures - theoretical lessons, hours	30
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	45
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Projects tasks: hours	
		17.2.	Individual tasks: hours	18
		17.3.	Studying at home learning	87
18.	<b>Requirement for signature</b>	Conditional criteria for signature: To take active participation in all the teaching activities including continuous assesments. Theoretical course: 1-3 Practical course: 5-7		
19.	<b>Method of assessment</b>			
	19.1.	<b>Tests: points</b>	Continual assessment:  1. Gastrointestinal system, Written: (8.4-14 points) Microscopic slides (2.4 - 4 points) 1. Urinary and male & female genital systems, Written: (13.2-22 points) Microscopic slides (2.4 - 4 points)	
	19.2	<b>Seminar paper/project, written and oral presentation: points</b>		
19.3	<b>Final exam:</b>	Skin, Respiratory system, Endocrine system, CNS, Eye, Ear  1. Practical: Microscopic slides (4,8 – 8 points) 2. Oral: (22,8-38 points)		

			Conditional criteria for assesment of knowledge: Students which have succesfully pass the continuous assesment, apply for final exam. Complete final exam: The final exam is a combination of both written examinations (segments of the continuous assessments with less of 60%) and final examination. The grade for the entire exam is obtained according to the table of grades and based on the sum of the points gained in all the activities including the continual assessment.			
20.	<b>Grading criteria (points / grade)</b>		up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	<b>Method of monitoring the quality of teaching process</b>	Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities				
22.	<b>Literature</b>					
	<b>22.1.</b>	<b>Mandatory literature</b>				
		Number	Author	Title	Publisher	Year
		1.	Ross MH, Wojciech P	Histology, Text and atlas	Philadelphia: Lippincott, Williams and Wilkins	2023
		2.	Junqueira JK, Carneiro H	Basic histology, Text and atlas	Chicago: McGraw Hill	2021
		3.	Moore KL, Persaud TVN	The developing human Clinically oriented embryology	Mumbai: Elsevier	2012
	<b>22.2.</b>	<b>Additional literature</b>				
		Number	Author	Title	Publisher	Year
		1.	Department of histology and embryology	Study guide for Histology & embryology 2	http://medf.u kim.edu.mk/	2017
		2.	Kostovska N, Milenkova L.	Histology and embryonic development of organ systems	Skopje: Ss Cyril and Methodius University, Faculty of Medicine	2013
		3.	The stuff of the Department of histology and embryology	Selected files (Power Point presentations) available on the web site of the Medical Faculty	Contiuously revised	
		4.	www.histologyguide.com	on-line learning programme		



		5.	www.biolucida.com	on-line learning programme		
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Number:10

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	MEDICAL CHEMISTRY			
2.	Code	MED 123			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Medical Faculty, Department of medical and experimental biochemistry			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	First (I)	Semester	Second (II)
7	ECTS credits	7			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Svetlana Cekovska, PhD - responsible professor *Lectures held by all professors from the Department of medical and experimental biochemistry			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: None In order to take the final exam, the student should obtain the minimum points in the two continual assessments.			
11.	Subject program goals (competences) and study results:	<b>Teaching goals:</b> <ul style="list-style-type: none"><li>To repeat about the Science of Matter and Chemical Bonds in Molecules;</li><li>To learn about Solutions and Electrolytes;</li><li>To understand the Energy and Kinetics of chemical reaction;</li><li>To learn about Acids and Bases, Redox reaction, pH and Buffers;</li><li>To learn about the Structure and Properties of Organic Compounds;</li><li>To learn about the biologically important Organic compounds (Carbohydrates, Proteins, Lipids, Nucleic acids).</li></ul>			
12.	Subject content in details by chapters and units, with study	<b>Theoretical course:</b> <ul style="list-style-type: none"><li>Structure of atoms and molecules, Ionic, Covalent bonds, Intermolecular forces;</li></ul>			

	<b>results for every chapter</b>	<ul style="list-style-type: none"><li>• Basic thermodynamics laws, Energy of chemical reactions, Chemical kinetics, Rates of chemical reactions, Chemical equilibrium;</li><li>• Solutions, Types of solutions, Colligative properties, Weak and Strong electrolytes (dissociation);</li><li>• Oxido-reduction (Redox reactions), Theory of acids and bases, pH, Buffers;</li><li>• Chemistry of carbon atoms, Alkanes, Alkenes, Alkynes, Aromatic compounds and their derivatives, Alcohols, Phenols, Aldehydes, Ketones, Carboxylic acids, Nitrogen and Sulfur-containing compounds;</li><li>• Structures and functions of carbohydrates, proteins, lipids, nucleic acids;</li><li>• Chemistry of pollution, pollution of air, natural waters, sea water, purification of contaminated water before returning to the natural environment, getting clean water.</li></ul> <p><b>Practical lessons:</b></p> <ul style="list-style-type: none"><li>• Preparation and examination of colligative properties of solutions, Volumetric analysis in chemistry, Calculation of solution concentration;</li><li>• Calculation from chemical equations and formulas;</li><li>• Nomenclature of more important organic compounds in medicine, reactions of carbohydrates, protein and lipids.</li></ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program Passed subject provides attendance to following exams: Biochemistry 1		
14.	<b>Description of the subject's study and working methods in details</b>	Classroom-oriented lectures, interactive lectures, group work, practical training, preparing and presentation of seminar papers, laboratory work, studying at home.		
15.	<b>Total available time frame</b>	210 classes		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	41
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	Practical lessons 40 Seminars 9
		16.3.	Practice: hours	/
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	/
		17.2.	Individual tasks: hours	/
		17.3.	Studying at home: hours	120
18.	<b>Requirements for signature</b>	To receive a signature in the index, the student is required a minimum of 10 points from practical exercises, a minimum of 1 point from seminar work and 1 point from attending lectures on theory, for a total of 12 points. Active participation (points) min – max Theoretical course 1-3 Practical course 10–12		
19.	<b>Methods of assessment</b>			

	19.1.	Tests: points		Test 1	min-max	12- 20
	19.2.	Seminar paper/project, written and oral presentation: points		Test 2	min-max	9-15
	19.3.	Final exam: points		min-max 1-5		
20.	Grading criteria (points/grade)		Up to 59 points	Practical exam-written min-max 9-15		
			From 60 to 68 points	Final exam (oral examination) min-max 18-30		
			From 69 to 76 points			
			From 77 to 84 points			
			From 85 to 92 points			
			From 93 to 100 points			
	21.	Methods of monitoring the quality of the teaching process		Anonymous student evaluation of the subject, teachers and collaborators involved in the educational activities		
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Denniston KJ, Topping JJ, Caret RL	General, Organic and Biochemistry, 9 <sup>th</sup> ed	New York: Mc Graw Hill Education	2017
		2.	Vujovic Z	Selected parts of chemistry for the students of Medical School	Belgrade: Medical Faculty, Belgrade, Serbia	2006
		3.	Jones L, Atkins P	Chemistry: molecules, matter, and change	New York: W.H. Freeman and Company	2002
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Krstevska M, Alabakovska S, Efremova Aaron S, Labudovic D, Cekovska S	General and Organic Chemistry for Medical Students	Skopje: Ss Cyril and Methodius University, Faculty of Medicine	2014

		2.	Dzhekova-Stojkova S, Korneti P, Todorova B, Trajkovska S.	Biochemistry	Skopje: Ss Cyril and Methodius University, Faculty of Medicine	2011
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Number:11

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	INTRODUCTION TO HUMAN GENETICS			
2.	Code	MED 124			
3.	Study program	General medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of human genetics			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	First (I)	Semester	Second (II)
7.	ECTS credits	5			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Elena Shukarova-Angelovska - PhD, MD - responsible professor *Lectures held by all professors from the Department of human genetics			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Obtained the signature of the Morphology and physiology of the cell. In order to take the final exam, the student should obtain the minimum points in theoretical and practical part of the course. Active participation (points)  Theoretical course			

		<ul style="list-style-type: none"> <li>- Training the students regarding basic principles of cytogenetic, molecular genetics, biochemical genetics, population genetics, reproductive genetics and genetics in forensic medicine including diagnostic methods</li> <li>- Educating the students on basic principles in inheritance-mendelian and nonmendelian</li> <li>- Training the students about basic ethical principles in genetics and communication with families with genetic disorders and malformations</li> </ul>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Contents of the study program:</b></p> <p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Basics of human genetics - organization of prokaryotic and eukaryotic DNA, nuclear and non-nuclear DNA, basic processes of replication, transcription and translation, regulation of gene expression and signaling, gene mapping in prokaryotes and eukaryotes, recombinant DNA cloning, basics of cytogenetics, chromosome organization, frequent chromosomal aberrations, cell cycle and mitotic and meiotic division, and errors in their behavior, cellular and molecular basis of heredity, Mendelian genetics, nonmendelian inheritance - complex and multifactorial inheritance genetic factors in common diseases. Mapping and identification of genes for monogenetic diseases. Developmental genetics and processes that disrupt embryonic development. Mutations- types, ways of occurrence and systems for repair of the DNA. Molecular and biochemical basis of genetic diseases. Basics of onkogenetics and immunogenetics. New technologies and future possibilities for gene therapy. Prenatal and postnatal genetic testing of inherited and genetic conditions, ethical aspects of genetic examinations.</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>• Methods of genetic analysis - DNA extraction, methods for detecting of known and unknown mutations and polymorphisms. Methods of writing and interpretation of the results. Basics in cytogenetics - performing karyotype, staining methods, FISH, detection of chromosomal aberrations. Interpretation of the mendelian and nonmendelian inheritance, interpretation of the types of the mutations, oncogene changes. Screening methods in the population-methods and organisation.</li> <li>• Basics in dysmorphology and clinical recognition of the syndrome and multimalformations, basic principles in prenatal and postnatal detection of malformations, genetic counseling.</li> </ul>
13	<b>Interconnection between subjects</b>	<p>Related to all subjects in the study program</p> <p>Signature from this subject provides attendance for Introduction to Immunology</p> <p>Passed subject provides attendance to VII semester.</p>
14.	<b>Description of the subject's study and working methods in details</b>	Integrated lecturers, practical tutorials/seminars.
15.	<b>Total available time frame</b>	150 hours: 30 theoretical lecturers, 30 practical tutorials, 90 hours home learning and seminar work

16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	30		
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	30		
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours	depending on the interest of student		
		17.2.	Individual tasks: hours	depending on the interest of student		
		17.3.	Studying at home: hours	90		
18.	Requirements for signature	60% of teoretical and 80% of practical training				
19.	Methods of assessment					
	19.1.	Tests: points	min	max		
			Continual assessment 1	8 25		
			Continual assessment 2	8 25		
	19.2.	Seminar paper/project, written and oral presentation: points	optional			
19.3.	Final exam: points	min	max			
		Theoretical exam	30	50		
		Oral exam	18	30		
		If the student passes all 3 continuous tests with minimal points (min 60% of the sum of 2 colloquiums), he can pass directly on the oral exam				
20.	Grading criteria (points/grade)	Up to 59 points		5 (five) (F)		
		From 60 to 68 points		6 (six) (E)		
		From 69 to 76 points		7 (seven) (D)		
		From 77 to 84 points		8 (eight) (C)		
		From 85 to 92 points		9 (nine) (B)		
		From 93 to 100 points		10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process	Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Mueller RF, Young ID.	Emery’s Elements of Medical Genetics. 15 <sup>th</sup> ed.	New York: Elsiever	2017
		2.	Strachan T, Read A	Human Molecular Genetics 5 <sup>th</sup> ed.	Oxford University Press	2018

		3.	Gardner RM, Sutherland GR	Chromosome abnormalities and genetic counseling, 4 <sup>nd</sup> ed	Oxford University Press	2012
		4.	Nussbaum RL, McInnes RR, Willard HF	Thomson & Thomson Genetics in medicine 8 <sup>th</sup> ed	New York: Elsevier	2015
	22.2.	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Kocova M.	Medical genetics	Skopje: Ss Cyril and Methodius University, Faculty of Medicine	2013
		2.	Petlickovski A.	Authorized lecturers	Skopje: Ss Cyril and Methodius University, Faculty of Medicine	2014
		3.	Practicums for practical lessons 1&2	Authorized lecturers	Skopje: Ss Cyril and Methodius University, Faculty of Medicine	2009

Number:12

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>HEALTH PROMOTION</b>			
2.	<b>Code</b>	MED 125			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje Faculty of Medicine, Department of Social Medicine			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	First (I)	Semester	Second (II)
7.	<b>ECTS credits</b>	1			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Elena Kjosovska, PhD, MD - responsible professor *Lectures held by all professors from the Department of Social Medicine			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: a signature for the subject Introduction to Medicine. In order to take the final exam, the student should pass the predicted continuous assessment.			

11.	Subject program goals (competences) and study results:	<ul style="list-style-type: none"><li>• Introduction to the basic values of health and health promotion</li><li>• Preparing for the independent performance with educational purposes</li><li>• Promote health to target group at all the levels of health care</li></ul>											
12.	Subject content in details by chapters and units, with study results for every chapter	<ul style="list-style-type: none"><li>• Definition of health education and health culture</li><li>• Objectives and to whom the health education is intended</li><li>• Health promotion and health education</li><li>• Motivation for learning health promotion</li><li>• Forms, methodology and tools in work in the field of health promotion</li><li>• Health promotion principles</li><li>• Health promotion methods</li><li>• Health promotion tools</li><li>• Areas of work in health promotion</li><li>• Planning and organization of health promotion</li><li>• Methodology of preparation and implementation of the health promotion program in the community</li><li>• Practicing health promotion in the Republic Macedonia</li><li>• Health promoting schools</li><li>• Healthy cities, healthy hospitals</li><li>• Behavior and health education</li><li>• Health promoting indicators</li></ul>											
13.	Interconnection between subjects	Related to all subjects in the study program Passed subject provides attendance to VII semester											
14.	Description of the subject's study and working methods in details	Presentation of cases from clinical practice; Organizing an open discussion in small groups on a given topic; Play a role according to a given scenario; Practicing communication, practicing presentation skills, preparation of essay – seminar paper											
15.	Total available time frame	30											
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	10									
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	5									
		16.3.	Practice: hours										
17.	Other forms of activities	17.1.	Project tasks: hours	5									
		17.2.	Individual tasks: hours										
		17.3.	Studying at home: hours	10									
18	Requirements for signature	<div>To get a signature, the student is required to attend the theoretical, practical training and seminars and to achieve minimum points.</div> <table><thead><tr><th></th><th>Min</th><th>max</th></tr></thead><tbody><tr><td>Theoretical course</td><td>2</td><td>5</td></tr><tr><td>Practical course</td><td>2</td><td>5</td></tr></tbody></table>				Min	max	Theoretical course	2	5	Practical course	2	5
	Min	max											
Theoretical course	2	5											
Practical course	2	5											
19.	Methods of assessment												
	19.1.	Tests: points	20 - 30										



	19.2.	Seminar paper/project, written and oral presentation: points		6 - 10		
	19.3.	Final exam: points		30 – 50		
				The grade from the assessment of the subject is formed in accordance with the table of grades, based on the sum of points from all activities, continuous checks and final examination.		
20.	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	State of Victoria, Department of Human Services, 2003	Measuring health promotion impacts: A guide to impact evaluation in integrated health promotion	Rural and Regional Health and Aged Care Services Division Victorian Government Department of Human Services	2008

		2.	Donev D, Mirchevs ka L, Stojanovs ka V, Kjosevska E, Velkovski Z. Gligorov I, Rizova E	Health promotion and health education	Skopje: Ss Cyril and Methodius University, Faculty of Medicine	2013
		3.	Spasovski M, Tozija F, Kjosevska E, Topuzovs ka G, Nikovska D.	Introduction in medicine	Skopje: Ss Cyril and Methodius University, Faculty of Medicine	2023
		4.	EU Directorat e for Health and Food Safety	Mapping metrics of health promotion and disease prevention for health system performance assessment	Luxembourg Publications: Office of the European Union	2023
	22.2.	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Donev D, Pavlekovi c G, Zaletel Kragelj L.	Health promotion and disease prevention	Hans Jacobs Publishing Company	2007

Number:13

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
<b>1.</b>	<b>Subject</b>	<b>MEDICAL ETHICS AND DEONTOLOGY</b>
<b>2.</b>	<b>Code</b>	MED 126

3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Medical deontology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year cycle			
6.	<b>Academic year/semester</b>	Year	First (I)	Semester	Second (II)
7.	<b>ECTS credits</b>	2			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Zlatko Jakjovski, PhD, MD - responsible professor *Lectures held by the professors from the Department of Medical deontology			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: None In order to take the final exam, the student should obtain minimum points in theoretical courses			
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• adoption of the historical basis for the development of medical ethics and deontology</li> <li>• adoption of the most important elements of medical ethics</li> <li>• adoption of the rights, in particular the duties of health workers in terms of patients and their relatives and other representatives</li> <li>• introduction to proper treatment in their daily practice through examples</li> <li>• interactive learning, debate and seminar papers as tools for easier adoption of matter and free thinking on certain ethical issues</li> </ul>			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<ul style="list-style-type: none"> <li>• <b>Theoretical course:</b></li> <li>• Introduction to the general principles of ethics as a philosophical science</li> <li>• Introduction to ethical principles in different historical eras</li> <li>• Introduction to bioethics</li> <li>• Known philosophical teachings and philosophers that interface with medical ethics</li> <li>• General principles of medical ethics</li> <li>• Respect and equal treatment</li> <li>• Communication and consent (informed consent)</li> <li>• Presumed consent</li> <li>• Decisions on behalf of patients who are unable to individually give consent, the notion of representation, participation of such patients to the moment of their end capabilities of understanding</li> <li>• Medical secret</li> <li>• Beginning of life, ethical problems in biological assisted fertilization (BAF)</li> <li>• End of life, ethical problems of euthanasia</li> <li>• Ethical tenets of behavior among health workers</li> <li>• Ethical tenets of behavior among health workers and patients</li> <li>• Ethical tenets of behavior among health workers and relatives of patients</li> </ul>			

		<ul style="list-style-type: none"><li>• Transplant and ethical dilemmas, especially in situations of possible cadaveric transplants</li><li>• Medical error and ethical problems</li><li>• Codes of medical ethics and deontology</li><li>• Most important conventions and declarations, particularly after 1948 that basically have the Universal Declaration of Human Rights by the UN Seminar papers: Students themselves choose matter in the field of medical ethics and deontology.</li></ul>		
13.	Interconnection between subjects	Related to all subjects in the study program Passed subject provides attendance to VII semester.		
14.	Description of the subject's study and working methods in details	Lectures, PPP, interactive discussions, exercises, working in small groups, seminars, interactive teaching, debate and seminar papers		
15.	Total available time frame	60 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	30 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	30 hours
18.	Requirements for signature	In order to get a signature, the student should obtain minimum points in theoretical courses Theoretical course: points min. 6 – max. 10 Presence on theoretical course: 51-60% - 6 points 61-70% - 7 points 71-80% - 8 points 81-90% - 9 points 91-100% - 10 points		
19.	Methods of assessment			
	19.1.	Tests: points	Continual assessment min. 24 – max. 40	
	19.2.	Seminar paper/project, written and oral presentation: points	Seminar works min. 6 – max. 10	
	19.3.	Final exam: points	Written exam min. 24 – max. 40	
20.	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)
			From 60 to 68 points	6 (six) (E)
			From 69 to 76 points	7 (seven) (D)
			From 77 to 84 points	8 (eight) (C)
			From 85 to 92 points	9 (nine) (B)
			From 93 to 100 points	10 (ten) (A)

21.	Methods of monitoring the quality of the teaching process	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Rogers WA, Braunack – Mayer A.	Practical Ethics for General Practice	Oxford University Press	2009
		2.	Boshkoski K.	Medical ethics and deontology	Skopje: OZ Dizajn	2007
		3.	World Medical Association	Manual of ethics for medical doctors SLA, translation	Skopje: Macedonian Medical Association	2005
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Jakjovski Z.	Collection of Declarations, Conventions, Codes and laws -Teaching materials on English for students prepared by Department of Medicine deontology	Ss Cyril and Methodius University, Faculty of Medicine, Department of Medicine deontology	2018

Number:14

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>FIRST AID</b>			
2.	<b>Code</b>	MED 127			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of surgery			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	First (I)	Semester	Second (II)
7.	<b>ECTS credits</b>	1			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Oliver Stankov, PhD, MD - responsible professor *Lectures held by professors from the Department of Anesthesiology with reanimation and Department of Surgery			

9.	<b>Language of the study</b>	English		
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: None In order to take the final exam, the student should attend the theoretical, practical training and seminars and to gain minimum scores		
11.	<b>Subject program goals (competences) and study results:</b>	Introducing the basics of first aid and life support skills. Students are introduced with the principles and skills of first aid in unconscious situations, bleeding, broken bones, burns and other accidents, as well as the system of modern triage in mass disasters.		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>First cycle</b> <ul style="list-style-type: none"> <li>• What is first aid: introduction, meaning and methods</li> <li>• Reasons that lead to the need of providing first aid and assessment of the situation: awareness, breathing, circulation, injuries</li> <li>• Basics of cardiac pulmonary resuscitation</li> <li>• Reanimation</li> <li>• Life support</li> <li>• Asphyxia and other conditions of impaired breathing</li> <li>• Poisoning</li> <li>• Other types of emergency situations</li> <li>• Aches</li> </ul> <b>Second cycle</b> <ul style="list-style-type: none"> <li>• Wounds and bleeding</li> <li>• Fractures</li> <li>• Injuries on the muscle and joint surfaces</li> <li>• Burns</li> <li>• Bandaging and bandages</li> <li>• Effects of low and high temperatures</li> <li>• Procedures for major incidents – organization</li> <li>• Blackouts.</li> </ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program Passed subject provides attendance to VII semester		
14.	<b>Description of the subject's study and working methods in details</b>	Classes will be held in the form of a two-day intensive course. The first day will be taught theoretical classes and practical exercises in groups on reanimation phantom (3 class's theory and 4 classes' practical exercises). The second day will be taught theoretical and practical exercises in surgery (taking care of wounds, wounds, fractures and set.) (3 class's theory and 4 classes practical exercises). Discussion and consultation with teachers.		
15.	<b>Total available time frame</b>	30		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	7 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	8 hours
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 hours
18.	<b>Requirements for signature</b>	To get a signature the student is required to attend the theoretical, practical training and seminars and to gain minimum scores.		

19	Methods of assessment					
	19.1.	Tests: points			60 - 100	
	19.2.	Seminar paper/project, written and oral presentation: points			/	
	19.3.	Final exam: points			Reanimation 30 -50 Surgery 30 -50	
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Jeffrey Schaidler Stephen R. Hayden Richard Wolfe Roger M. Barkin Peter Rosen	Rosen and barkin's 5 minute emergency medicine consult.	Skopje: Tabernakul	2011
22.2.	Additional literature					
	Number	Author	Title	Publisher	Year	
	1.	Mirjana Shosholcheva and co-autors	Cardio pulmonary resuscitation	Ss Cyril and Methodius University, Faculty of Medicine	2021	

Number:15

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
<b>1.</b>	<b>Subject</b>	<b>ANATOMY 3</b>
<b>2.</b>	<b>Code</b>	MED 211
<b>3.</b>	<b>Study program</b>	General Medicine
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Medical Faculty, Department of Anatomy

5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Second (II)	Semester	Third (III)
7.	<b>ECTS credits</b>	6			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Biljana Zafirova, PhD, MD - responsible professor *Lectures held by all professors from the Department of Anatomy			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Precondition for attending the classes is passed Anatomy 1, Anatomy 2, Histology and Embriology 1, and the precondition for taking the subject's final exam is passed continual assessment from Anatomy 3.			
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• To become acquainted with the morphology and the structural elements of the head and neck;</li> <li>• To become acquainted with the topography of the head and neck;</li> <li>• To become acquainted with the muscles, fasciae, blood and lymph vessels, nerves and the organs of the head and neck;</li> <li>• To become acquainted with the morphology and structure of the sense of hearing, sense of sight and sense of balance;</li> <li>• To become acquainted with the morphology, structure and the significance of the central nervous system components (CNS).</li> </ul>			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p>The theoretical part of the course deals with the comprehensive concept of the curriculum. The practical part corresponds with the theoretical course.</p> <p><b>Theoretical course:</b></p> <p><b>1. Introduction to head and neck anatomy</b></p> <p><b>2. Head and neck muscles</b></p> <ul style="list-style-type: none"> <li>– subcutaneous (mimic) muscles of the head, platysma, mm. masticatorii, m. sternocleidomastoideus, mm. suprahyoidei, mm. infrahyoidei, mm. scaleni, mm. prevertebrales</li> </ul> <p><b>3. Arteries of the head and neck</b></p> <ul style="list-style-type: none"> <li>– a. carotis communis, a. carotis externa, a. carotis interna, a. subclavia</li> </ul> <p><b>4. Veins of the head and neck</b></p> <ul style="list-style-type: none"> <li>– v. jugularis interna, sinus durae matris, v. jugularis ext. et ant.</li> </ul> <p><b>5. Lymphatic system of the head and neck</b></p> <p><b>6. Nerves of the head and neck</b></p> <ul style="list-style-type: none"> <li>– nn. craniales, plexus cervicalis, rr.dorsales nn. cervicalium</li> </ul> <p><b>7. Organs of the head and neck</b></p> <ul style="list-style-type: none"> <li>– cavum oris, lingua, isthmus faucium, tonsilla palatina, gl.l.oris, pharynx, nasus externus, cavum nasi, sinus paranasales, larynx, glandula thyroidea, glandulae parathyroideae, glomus caroticus, bulbus oculi and it's content, organa oculi accessoria, auris externa, auris media, auris interna</li> </ul> <p><b>8. Central nervous system</b></p> <ul style="list-style-type: none"> <li>– Introduction</li> </ul>			



		<ul style="list-style-type: none"><li>– Medulla spinalis, truncus cerebri (medulla oblongata, pons mesencephalon), cerebellum, diencephalon, cerebrum.</li><li>– Meninges and cerebrospinal fluid</li><li>– Vascularization of CNS</li><li>– Functional systems (CNS pathways: motor, sensory, auditory, vestibular, visual, olfactory, gustatory), limbic and neuroendocrine system, the functional anatomy of the reticular formation, monoaminergic and cholinergic systems and organization of the CNS for higher integrative functions.</li></ul> <p><b>Practical lessons:</b></p> <ul style="list-style-type: none"><li>– Topographical regions of the head and neck</li><li>– Recognition of CNS parts on fixed models</li></ul>						
13.	<b>Interconnection between subjects</b>	Related to all subjects of the faculty. Passed exam of Anatomy 3 is precondition for taking the classes of Pathology 1 and Clinical examination 1.						
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching during lectures and practical trainings, seminars.						
15.	<b>Total available time frame</b>	180						
16.	<b>Forms of teaching activities</b>	16.1. Lessons – theoretical lessons, hours 45						
		16.2. Practical lessons (laboratory, auditory), seminars, team work: hours 45						
		16.3. Practice: hours						
17.	<b>Other forms of activities</b>	17.1. Project tasks: hours						
		17.2. Individual tasks: hours						
		17.3. Studying at home: hours 90						
18.	<b>Requirements for signature</b>	<p>In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper; In order to take the final exam, the student should obtain the minimum points in the continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam with previous agreement with Department of Anatomy.</p> <p>The grade of the subject is formed according to the grading criteria table on the basis of the sum of the points of all activities, continual assessments and the final exam.</p> <table><tr><td>Active participation (points)</td><td>min – max</td></tr><tr><td>Theoretical course</td><td>1-2 points</td></tr><tr><td>Practical course</td><td>4 - 6 points</td></tr></table>	Active participation (points)	min – max	Theoretical course	1-2 points	Practical course	4 - 6 points
Active participation (points)	min – max							
Theoretical course	1-2 points							
Practical course	4 - 6 points							
19.	<b>Methods of assessment</b>							
	19.1. Tests: points	<b>Continual assessment 1</b> min – max						

			12-20 points			
			Myology, angiology and neurology of the head and neck.			
	19.2.	Seminar paper/project, written and oral presentation: points	min – max 1-2			
	19.3.	Final exam: points	<p>min. – max.</p> <p>*Test 12-20 points</p> <p>**Practical examination 12-20 points</p> <p>***Oral examination 18-30 points</p> <p>* Test: Organs of the head and neck, senses and the central nervous system.</p> <p>**Practical examination: region of the head and neck.</p> <p>*** Oral examination (integrative) : Includes 6 questions (each scored from 3-5 points) questioning the integrative knowledge that is important for understanding the point of the subject and medical practice.</p> <p>The student is obligated to achieve a minimum of the intended points for each part of the final exam separately so that the points for the final exam can be entered. Otherwise, the final exam is considered failed.</p>			
20.	Grading criteria (points/grade)	Up to 59 points		5 (five) (F)		
		From 60 to 68 points		6 (six) (E)		
		From 69 to 76 points		7 (seven) (D)		
		From 77 to 84 points		8 (eight) (C)		
		From 85 to 92 points		9 (nine) (B)		
		From 93 to 100 points		10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process	Student anonymous evaluation for the subject, teachers and associates participating in the teaching.				
Literature						
22.1.	Mandatory literature					
	Number	Author	Title	Publisher	Year	

		1.	Drake RL, Vogl AW, Mitchell AWM	Gray's Anatomy for Students	New York: Elsevier	2019
		2.	Halliday NL, Chung, HM.	Gross Anatomy	Pensilvania: Lippincott Williams & Wilkins	2023
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Moore KL.	Clinically oriented anatomy.	Baltimore: Lippincott Williams & Wilkins	2013
		2.	Paulsen F, Jens W.	Sobotta Atlas of Anatomy, Package, 16th ed.	Berlin: Urban & Fischer	2019

Number:16

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>BIOCHEMISTRY 1</b>			
<b>2.</b>	<b>Code</b>	MED 212			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Biochemistry and Clinical Biochemistry			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Second (II)	Semester	Third (III)
<b>7</b>	<b>ECTS credits</b>	7			
<b>8.</b>	<b>Professor (when more professors, a responsible professor is assigned)</b>	Assoc. prof. Irena Kostovska *The lectures held by all members of the Department of Biochemistry and Clinical Chemistry			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: passed exam in Medical chemistry. In order to take the final exam, the student should obtain the minimum points from theoretical course, practical course and seminars.			

11.	<b>Subject program goals (competencies) and study results:</b>	<ul style="list-style-type: none"> <li>• To learn and to define the major characteristics of proteins, carbohydrates, lipids, and nucleic acid bases, of nucleotides, and nucleosides (both ribose and deoxyribose-forms);</li> <li>• To describe the flow of genetic information (DNA→ proteins); naming the three types of RNA and their roles;</li> <li>• To learn about plasma proteins, immunoglobulins;</li> <li>• To learn the structure and the transport through the biological membranes;</li> <li>• To describe different types of membrane transport and biosignalization;</li> <li>• To define hormones and hormone cascade system; introducing peptides, amino acid-derived hormones, and steroid hormones and their role in signal transducing;</li> <li>• To be informed about the translocation of proteins in different cell compartments;</li> <li>• To define the vitamins as enzyme cofactors, hormones (vitamins A and D), antioxidants (vitamin E), and anti-hemorrhagic compounds (vitamin K);</li> <li>• To be informed about the six classes of the enzymes;</li> <li>• To understand the types of enzyme catalysis and the types of catalyzes enzyme kinetics, and inhibition of the enzyme reactions;</li> </ul>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Water metabolism;</li> <li>• Biochemistry of the cell;</li> <li>• Structure and function of the nucleic acid bases of nucleotides and nucleosides (both ribose and deoxyribose-forms);</li> <li>• Structure and function of the proteins, protein synthesis, protein degradation, gene expression regulation;</li> <li>• Structure and function of the hemoglobin, myoglobin, and amino-acid derivatives;</li> <li>• Structure of the extracellular matrix, collagen, elastin, laminin, cartilage;</li> <li>• Biochemistry of the cytoskeleton;</li> <li>• Translocation of the proteins importunes and exporters;</li> <li>• Plasma proteins, immunoglobulin (s);</li> <li>• Carbohydrates as a compound of the cell membrane, homoglycans, heteroglycans, glycosaminoglycans (hetero-polysaccharides of the extracellular matrix), proteoglycans, glycoproteins, glycolipids;</li> <li>• Lipids as energy storage, as membrane components, signals, and pigments;</li> <li>• Lipoproteins;</li> <li>• Hormones, definition, chemical structure, biosynthesis, transport, degradation, mechanism of action, physiological effects;</li> <li>• Signal transduction, second messengers, tyrosine kinase, G-coupled protein receptors, JAK-Stat kinase, protein kinase G;</li> <li>• Biological membranes and transport;</li> </ul>

		<ul style="list-style-type: none"> <li>• Vitamins and vitamins as the enzyme cofactors and as hormones (vitamins A and D) and antioxidants (vitamin E) and anti-hemorrhagic compounds (vitamin K);</li> <li>• Enzyme and enzyme catalysis, Michaelis-Menten- equation, Hill's equation, enzyme activation, enzyme inhibition, allosteric and covalent modification of the enzyme activity, regulation of enzyme activity, characteristics of six enzyme classes.</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>• Plasma protein separation techniques, lipoprotein separation techniques (electrophoresis), and carbohydrate separation techniques (chromatography).</li> <li>• Qualitative determination of DNA in the tissue sample of the experimental animal(s);</li> <li>• Michaelis-Menten - equation, pH optimum and temperature optimum;</li> <li>• Quantification of several biochemical parameters: vitamins, proteins, and carbohydrates in human serum.</li> </ul>
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program Signature provides attendance for following subjects: Clinical examination 2, Pathology 2, Pharmacology, Transfusiology Passed subject provides attendance to following exams:
14.	<b>Description of the subject's study and working methods in details</b>	Classroom-oriented lectures, interactive lectures, group work, practical training, preparing and presentation of seminar papers, laboratory work, studying at home
15.	<b>Total available time frame</b>	210 hours
16.	<b>Forms of teaching activities</b>	16.1. Lessons – theoretical lessons, hours 45
		16.2. Practical lessons (laboratory, auditory), seminars, team work: hours 48 12
		16.3. Practice: hours
17.	<b>Other forms of activities</b>	17.1. Project tasks: hours
		17.2. Individual tasks: hours
		17.3. Studying at home: hours 105
18.	<b>Requirements for signature</b>	To get a signature that the course has been successfully finished, the students are requested to actively participate in the theoretical course (minimum 1 point), practical course (the student has to be present in all the lectures), and seminars (minimum 1 point)
19.	<b>Methods of assessment</b>	
	19.1.	Tests: points Continuous tests 2
		Test 1 min.-max. 9-15 Test 2 min.-max. 9-15
	19.2.	Seminar paper/project, written and oral presentation: points
		<b>Theoretical course</b> min.- max. 2-3 <b>Practical course</b> min.- max. 7-12 <b>Seminar paper</b> min.- max. 3-5
	19.3.	Final exam: points
		<b>Practice Final Exam</b> min.- max. 12-20

			<b>Final oral exam</b> min.- max. 18-30			
20.	<b>Grading criteria (points/grade)</b>		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	<b>Methods of monitoring the quality of the teaching process</b>		Anonymous student evaluation of the subject, teachers, and collaborators involved in the educational activities			
22.	<b>Literature</b>					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Merey RK all.	Harper’s Illustrated Biochemistry, 28th Edition	Chicago: MC Graw Hill	2009
		2.	Nelson DL, Cox M	Lehninger Principles of Biochemistry, 7th Edition	New York: W. H. Freeman	2017
	22.2.	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Lieberman M	Mark’s Basic Medical Biochemistry	Philadelphia: Lippincott Williams & Wilkins	2013

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>PHYSIOLOGY 1</b>			
2.	<b>Code</b>	MED 213			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Physiology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year study			
6.	<b>Academic year/semester</b>	Year	Second (II)	Semester	Third (III)
7.	<b>ECTS credits</b>	11			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Beti Dejanova PhD, MD - responsible professor *Lectures held by all professors from the Department			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: Cell Morphology and Physiology, Histology and Embryology 1, Anatomy 1 and 2.			

		In order to take the final exam, the student should obtain the minimum points from the continual assessments.
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• To understand the functional organization of the human body</li> <li>• To define homeostasis and to consider the maintenance of the internal environment</li> <li>• To consider the functioning of each body system by physiological mechanisms</li> <li>• To clarify the relations among body systems within physiological conditions</li> <li>• To predict and understand integrated responses of the body systems in physiological references</li> </ul>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Functional organization of the human body, homeostasis by the feedback mechanisms and regulation of the body function.</li> <li>• Physiology of muscles: skeletal and smooth muscle tissue</li> <li>• Physiology of heart, cardiac cycle, heart tones, heart rate, physiology of circulation: arterial and venous systems, microcirculation and lymphatic system, control mechanisms of circulatory regulation, blood pressure regulation.</li> <li>• Physiology of blood and blood components, blood groups, hemostasis and coagulation</li> <li>• Physiology of respiratory system: respiratory and conductive zones, respiratory circulation, gas exchange and gas transport, respiratory regulation</li> <li>• Physiology of body fluids and body fluids regulation</li> <li>• Physiology of urinary system, regulation of electrolytes and acid-base balance</li> <li>• Physiology of gastrointestinal system, digestion: cephalic, gastric and intestinal phase; peristalsis</li> <li>• Physiology of liver and metabolism of carbohydrates, fats and proteins, energy balance regulation, basal metabolism, nutrition</li> <li>• Skin physiology, termoregulation and body temperature</li> <li>• Body adaptation under specific conditions: hypobaric and hyperbaric conditions, physiology of sport</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>• Muscle activity examination, heart muscle performance in experimental animals and the influence of different stimuli, bioelectrical signals and electrocardiography registration and analysis</li> <li>• Blood analysis, blood components, blood groups determination, hemostasis examination</li> </ul>

		<ul style="list-style-type: none"><li>• Determination of respiratory function, static and dynamic lung function tests</li><li>• Examination of digestion: gastric fluid acidity and digestive enzymes activity</li><li>• Body temperature testing, metabolism rate determination and a meal planning assesment</li><li>• Testing the cardiovascular adaptation during exercise, determination of the cardiorespiratory capacity and maximal aerobic power</li></ul>														
13.	Interconnection between subjects	Related to all subjects in the study program Signature provides attendance for Physiology 2, Patophysiology 1 Passed subject provides attendance to following exams: Pathophysiology 2, Microbiology with parasitology 2, Pathology 1, Clinical examination 1														
14.	Description of the subject’s study and working methods in details	Interactive lectures of theoretical and practical teaching, introducing experimental animal models and computer learning by virtual models and videos.														
15.	Total available time frame	330														
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	75												
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	75												
		16.3.	Practice: hours													
17.	Other forms of activities	17.1.	Project tasks: hours													
		17.2.	Individual tasks: hours													
		17.3.	Studying at home: hours	180												
18.	Requirements for signature	The student has to obtain minimum points for each course attendance <table><tr><td></td><td>points</td><td>min</td><td>max</td></tr><tr><td>Theoretical course attendance</td><td></td><td>1</td><td>3</td></tr><tr><td>Practical course attendance</td><td></td><td>8</td><td>11</td></tr></table>				points	min	max	Theoretical course attendance		1	3	Practical course attendance		8	11
	points	min	max													
Theoretical course attendance		1	3													
Practical course attendance		8	11													
Methods of assessment																
19.1.	Tests: points	<table><tr><td></td><td>min</td></tr><tr><td>max Test I</td><td>9 15</td></tr><tr><td>Test II</td><td>9 15</td></tr><tr><td>Test III</td><td>9 15</td></tr><tr><td>Test IV</td><td>9 15</td></tr></table>				min	max Test I	9 15	Test II	9 15	Test III	9 15	Test IV	9 15		
	min															
max Test I	9 15															
Test II	9 15															
Test III	9 15															
Test IV	9 15															
19.2.	Seminar paper/project, written and oral presentation: points	<table><tr><td></td><td>min</td></tr><tr><td>max Seminar</td><td>1 3</td></tr></table>				min	max Seminar	1 3								
	min															
max Seminar	1 3															
19.3.	Final exam: points	<table><tr><td></td><td>min</td></tr><tr><td>max Final exam</td><td>14 23</td></tr></table>				min	max Final exam	14 23								
	min															
max Final exam	14 23															
20.	Grading criteria (points/grade)	Up to 59 points		5 (five) (F)												
		From 60 to 68 points		6 (six) (E)												
		From 69 to 76 points		7 (seven) (D)												
		From 77 to 84 points		8 (eight) (C)												
		From 85 to 92 points		9 (nine) (B)												



		From 93 to 100 points		10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process		Checking the student's attendance and student's anonymous evaluation of the teaching process				
22.	Literature						
	22.1.	Mandatory literature					
		Number		Author	Title	Publisher	Year
		1.	Guyton AC, Hall JE.	Textbook of Medical Physiology 14 <sup>th</sup> edition	London: Elsevier	2020	
		2.	Dejanova B, Petrovska S, Todorovska L.	Physiology of certain systems	Skopje: Ss Cyril and Methodius University, Faculty of Medicine	2012	
		3.	Costanzo LS.	Physiology	London: Elsevier	2006	
		4.	Efremovska Lj et al.	Manual Physiology 1	Skopje: Ss Cyril and Methodius University, Faculty of Medicine	2012	
	22.2.	Additional literature					
		Number		Author	Title	Publisher	year
		1.	Widmaier E, Raff H, Stran K.	Vander's Human Physiology: The Mechanisma of Body Function	New York: McGraw-Hill Education	2013	

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>INTRODUCTION TO IMMUNOLOGY</b>			
2.	<b>Code</b>	MED 214			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Skopje, Faculty of Medicine, Department for Immunology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-years studies			
6.	<b>Academic year/semester</b>	Year	Second (II)	Semester	Third (III)
7.	<b>ECTS credits</b>	3			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Assistant Prof. Meri Kirijas, PhD, MD - responsible professor *Lectures held by all professors from the Department for Immunology			

9.	<b>Language of the study</b>	English
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: signature in Introduction to human genetics. In order to take the final exam, the student should obtain the minimum points from the two continual assessments
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• Introducing the students with the basic terminology and concepts in immunology</li> <li>• Gaining basic knowledge in immunodeficiencies, autoimmune disease and allergies</li> <li>• Training of students for performing and interpreting results from immunodiagnostic procedures</li> <li>• Connecting the basic immunology knowledge with clinical practice</li> </ul>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Overview of the Immune system</li> <li>• Cells, organs and microenvironments of the immune system</li> <li>• Recognition and response</li> <li>• Innate immunity</li> <li>• The complement system</li> <li>• The organization and expression of lymphocyte receptor genes</li> <li>• The major histocompatibility complex and antigen presentation</li> <li>• T-cell development</li> <li>• B-cell development</li> <li>• T-cell activation, helper subset differentiation and memory</li> <li>• B cell activation, differentiation and memory generation</li> <li>• Effector responses: antibody and cell-mediated immunity</li> <li>• Barrier immunity: the immunology of mucosa and skin</li> <li>• The adaptive immune response in space and time</li> <li>• Allergy, Hypersensitivities and chronic inflammation</li> <li>• Tolerance, autoimmunity and transplantation</li> <li>• Infectious diseases and vaccines</li> <li>• Immunodeficiency disease</li> <li>• Cancer and the immune system</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>• Methods for analyzing the function of phagocytes</li> <li>• Methods for immunophenotyping (flow cytometry)</li> <li>• Methods for protein assessment (nephelometry, CLIA, immunoelectrophoretic analysis, ELISA, Dot blot, indirect immunofluorescence, etc.)</li> <li>• Methods for determination of hypersensitive reactions</li> <li>• Methods in transplantation immunology</li> </ul>
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program Signature provides attendance for Microbiology and parasitology 1 Passed subject provides attendance VII semester

14.	Description of the subject’s study and working methods in details		Interactive teaching during lectures, independent study by using textbooks, practical exercises, seminars.			
15.	Total available time frame		90 hours			
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	24		
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	21		
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours	45		
18.	Requirements for signature		The student is required to actively follow all of the planned activities.			
19.	Methods of assessment					
	19.1.	Tests: points		Test 1: 16-26 Test 2: 12-20		
	19.2.	Seminar paper/project, written and oral presentation: points		13-22		
	19.3.	Final exam: points		19-32		
20.	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Anonymous evaluation by the students of the subject, as well of the teachers that participate.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Punt, Stranford, Jones, Owen	Kuby Immunology, 8 <sup>th</sup> edition	New York: W.H. Freeman	2019
		2.	Teaching materials on English for students prepared by the department			
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Sompayrac L.	How the immune system works, 6 <sup>th</sup> edition	New York: Wiley Blackwell	2019

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>BIostatISTICS WITH MEDICAL INFORMATICS</b>			
<b>2.</b>	<b>Code</b>	MED 215			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Epidemiology and biostatistics with medical informatics			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6 - year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Second (II)	Semester	Third (III)
<b>7.</b>	<b>ECTS credits</b>	5			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Vesna Velic Stefanovska, MD, PhD - responsible professor *Lectures held by professors from the Department of Epidemiology and biostatistics with medical informatics			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: None In order to take the final exam, the student should obtain the minimum points from the two continual assessments. To take the final exam, the student must pass the continuous tests or acquire a minimum of 30% of total number of points in the continuous tests, whereas during the exams session the student shall take the previously failed continuous tests, and then shall take the final exam. The assessment of the subject is established according to the table of marks, based on the sum of points from all activities, continuous tests and final exam.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>Acquiring knowledge of the basics of medical statistics, terminology, measuring units.</li> <li>Acquiring theoretical and practical knowledge of analyses of statistical series through implementation of appropriate statistical methods.</li> <li>Acquiring theoretical and practical knowledge of demographic and vital statistics and implementation of acquired knowledge in practice.</li> <li>Acquiring theoretical and practical knowledge of the basis, concepts and application of medical informatics.</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Content of the study program:</b>  <b>Theoretical course – Biostatistics:</b> <ul style="list-style-type: none"> <li>Descriptive analysis (plan of statistical research, methods of collection, grouping and presentation of data; use of relative numbers; analyses of structure of statistical mass according to numerical characteristics; method of sampling)</li> <li>Distribution of frequency and probability (estimation of parameters of samples; standard error of mean and proportion)</li> <li>Hypothesis (t – test)</li> <li>Analysis of variance</li> <li>Pearson <math>X^2</math> - test</li> </ul>			

		<ul style="list-style-type: none"><li>• Regression analysis and linear correlation</li><li>• Measures of correlation based on ranked data</li><li>• Non parameter tests – dependant samples</li><li>• Research of dynamics of occurrences</li><li>• Analyses of survival time</li><li>• Demographic statistics</li><li>• Vital statistics</li></ul> <p><b>Theoretical course</b> – Medical informatics - Medical informatics - Theoretical classes: Medical data, information and knowledge; Medical decision making; Health information systems; Electronic health records and Bionformatics. Practical classes (practicals, seminars, research assignments): Searching, retrieval, processing, and storage of medical data information and knowledge; Medical decision-making (diagnosis, treatment selection, prioritization); "HIS" (information processes identification, data structures, classifications and nomenclature standardization, privacy and security); Bionformatics tools.</p> <p><b>Practical course:</b></p> <ul style="list-style-type: none"><li>• Relations, proportions, rates, indexes,</li><li>• Index of dynamics</li><li>• Modus and median</li><li>• Assessment of parameters of a sample</li><li>• Student t-test</li><li>• X<sup>2</sup> - test</li><li>• Correlation</li><li>• Assessment of proportions of the total statistical mass based on a sample</li><li>• Linear trend of time series</li><li>• Season index</li><li>• Practical application of terms of demographic and vital statistics</li><li>• Medical informatics</li></ul>	
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program Passed subject provides attendance to subject Epidemiology	
14.	<b>Description of the subject’s study and working methods in details</b>	Interactive teaching, practical course, seminars	
15.	<b>Total available time frame</b>	90 hours	
16.	<b>Forms of teaching activities</b>	16.1. Lessons – theoretical lessons, hours	18
		16.2. Practical lessons (laboratory, auditory), seminars, team work: hours	27
		16.3. Practice: hours	
17.	<b>Other forms of activities</b>	17.1. Project tasks: hours	
		17.2. Individual tasks: hours	

		17.3.	Studying at home: hours	45		
18	<b>Requirements for signature</b>		To obtain a signature, the student needs to acquire minimum points from attendance at seminars, theoretical and practical courses.  Active participation (points) min – max Theoretical course 1-3 Practical course 5–10			
19.	<b>Methods of assessment</b>					
	19.1.	Tests: points	Continual assessment (mid-term) consists of 2 written tests Points min. – max 18 - 30			
	19.2.	Seminar paper/project, written and oral presentation: points	Seminar work points min- max 0 -5			
	19.3.	Final exam: points	Oral part points min. – max. 36 - 52			
20.	<b>Grading criteria (points/grade)</b>		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	<b>Methods of monitoring the quality of the teaching process</b>		Anonymous evaluation by students on the subject, teaching staff, and associates participating in the teaching.			
22.	<b>Literature</b>					
	22.1.	<b>Mandatory literature</b>				
		Number	Author	Title	Publisher	Year
		1.	Altman DG.	Practical statistics for medical research	London: Chapman & Hall	2018
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Kirkwood BR, Sterne JAR.	Medical Statistics	New York: Wiley-Blackwell	2010

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>	
1.	<b>Subject</b>	<b>BIOCHEMISTRY 2</b>	
2.	<b>Code</b>	MED 221	
3.	<b>Study program</b>	General Medicine	

4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Biochemistry and Clinical Biochemistry			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Second (II)	Semester	Fourth (IV)
7	<b>ECTS credits</b>	5.5			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Associate Prof. Irena Kostovska, PhD, MD - responsible professor *Lectures held by all professors from the Department of Biochemistry and Clinical Chemistry			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: Signature from Biochemistry 1. To take the final exam, the student has to fulfill the tasks for the signature and pass the written exams.			
11.	<b>Subject program goals (competences) and study results:</b>	<p>Teaching goals:</p> <ul style="list-style-type: none"> <li>• To understand the biosynthesis of the biological molecules (carbohydrates, proteins, and lipids) and the catabolism to the final products and to understand the regulation of the most important biochemical pathways;</li> <li>• To understand the role of ATP in the body and the biological oxidation;</li> <li>• To understand the respiratory chain, oxidative phosphorylation, and ATP synthesis.</li> <li>• To understand the metabolism of hemoglobin;</li> <li>• To learn about the digestion and absorption of nutrients;</li> <li>• To learn about biochemistry of the blood count elements;</li> <li>• To learn and explain the metabolism of water and electrolytes;</li> <li>• To describe and explain the metabolic processes in the kidney, liver, muscle, bone, blood, and nervous system.</li> </ul>			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• General metabolism;</li> <li>• Metabolism of carbohydrates: glycolysis gluconeogenesis, pentose-phosphate cycle, glycogenesis, glycogenolysis;</li> <li>• Tricarboxylic acid cycle, oxidative decarboxylation of pyruvate;</li> <li>• Metabolism of lipids, beta-oxidation of the fatty acids, metabolism of ketone bodies, fatty acids synthesis, cholesterol synthesis, phospholipids, glycolipids, cholesterol catabolism;</li> <li>• Protein metabolism, the fate of nitrogen, urea synthesis, the fate of the carbon chain of the amino acids, synthesis of the non-essential amino acids, amino acid derivatives, regulation of the metabolic pathways;</li> <li>• Interrelation of metabolic pathways;</li> <li>• Hemoglobin Metabolism;</li> </ul>			

		<ul style="list-style-type: none"> <li>• Metabolism of nucleic acids</li> <li>• Respiratory chain, oxidative phosphorylation, and ATP synthesis.</li> <li>• Nutrition;</li> <li>• Electrolytes and acid-base balance;</li> <li>• Biochemical processes in the erythrocytes, leucocytes, thrombocytes, and hemostasis.</li> <li>• Biochemistry of the liver;</li> <li>• Biochemistry of kidneys;</li> <li>• Biochemistry of the nervous system;</li> <li>• Biochemistry of the muscle tissue;</li> <li>• Biochemistry of the bone tissue;</li> <li>• Free radicals and metabolism of xenobiotics.</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>• Quantification of the urea, acidum uricum, and creatinine in human plasma and urine samples;</li> <li>• Quantification of total cholesterol, triacylglycerols, LDL, and HDL in blood serum; in human serum;</li> <li>• Quantification of glycogen;</li> <li>• Quantification of antioxidative enzymes;</li> <li>• Quantification of enzyme activity of AST/ALT in human serum;</li> <li>• Quantification of electrolytes in human serum;</li> <li>• Qualitative and quantitative analyses of urine samples;</li> <li>• 4 – 20 % SDS-PAGE as a technique for separating proteins in urine.</li> </ul>
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program Passed subject provides attendance to VII semester
14.	<b>Description of the subject's study and working methods in details</b>	Classroom-oriented lectures, interactive lectures, group work, practical training, seminar paper, laboratory work, studying at home
15.	<b>Total available time frame</b>	165
16.	<b>Forms of teaching activities</b>	16.1. Lessons – theoretical lessons, hours 36
		16.2. Practical lessons (laboratory, auditory), seminars, team work: hours 39
		16.3. Practice: hours
17.	<b>Other forms of activities</b>	17.1. Project tasks: hours
		17.2. Individual tasks: hours
		17.3. Studying at home: hours 90
18.	<b>Requirements for signature</b>	<p>To get a signature that the course has been successfully finished, the students are requested to actively participate in the theoretical course (minimum 1 point), practical course (the student has to have 100% presence), and seminars (minimum 1 point).</p> <p>To take the final exam, the student has to fulfill the tasks for the signature and pass the written exams with 60% each.</p> <p>The test for the practical examination is independent and is passed if the student has gained 60% of the total number of points.</p>



		The final score is formed according to the table from the score of total planned activities taken into account.				
19.	Methods of assessment					
	19.1.	Tests: points 1 Continual assessment		Test 1 min.-max. 12-20		
	19.2.	Seminar paper/project, written and oral presentation: points		<b>Theoretical course</b> min.-max. 1-3 <b>Practical course</b> min.-max. 10-12 <b>Seminar paper</b> min.-max. 1-5		
	19.3.	Final exam: points		<b>Practice Final Exam</b> min.-max. 9-15 <b>Final oral exam</b> min.-max. 27-45		
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Anonymous student evaluation of the subject, teachers, and collaborators involved in the educational activities			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Merey RK, and all.	Harper’s Illustrated Biochemistry, 28th Edition	Chicago: MC Graw Hill	2009
		2.	Nelson DL, Cox M	Lehninger Principles of Biochemistry, 7th Edition	New York: W. H. Freeman	2017
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Lieberman M	Mark’s Basic Medical Biochemistry	New York: Lippincott Williams & Wilkins	2013

Number:21

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
<b>1.</b>	<b>Subject</b>	<b>PHYSIOLOGY 2</b>
<b>2.</b>	<b>Code</b>	MED 222

3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Physiology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Second (II)	Semester	Fourth (IV)
7	<b>ECTS credits</b>	6			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Beti Dejanova, PhD, MD - responsible professor *Lectures held by all professors from the Department			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: signature gained from Physiology 1. In order to take the final exam, the student should obtain the minimum points in the three continual assessments.			
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>To understand the regulatory systems of the human body</li> <li>To define nervous system functions and to understand its regulatory maintenance</li> <li>To clarify sense organs function including special senses: vision, hearing, equilibrium, taste and smell</li> <li>To define endocrine system functions, and to understand its regulatory maintenance</li> <li>To clarify the relations among nervous, endocrine and body systems within physiological conditions</li> <li>To predict and understand integrated responses of regulatory systems in physiological conditions</li> </ul>			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>Physiology of nervous system, neuron, nerve impulse, synapses, neurotransmitters and neuromodulators</li> <li>Physiology of motor cortex, basal ganglia, cerebellum, brainstem, spinal cord, vegetative spinal reflexes, Physiology of autonomic nervous system.</li> <li>Physiology of sensory system, receptors, neural pathways, sensory cortex, somatic sensations, sense of touch and position, sense of vision, sense of hearing, sense of equilibrium, sense of taste, sense of smell, sense of pain</li> <li>Physiology of the reticular formation; Physiology of limbic system and hypothalamus. Physiology of sleeping, intellectual functions and learning.</li> <li>Endocrine physiology and mechanisms of action of the hormones; Physiology of endocrine glands: pineal, pituitary, thyroid, parathyroid, adrenal, ovaries, testicles and endocrine pancreas.</li> </ul> <p><b>Practical lessons:</b></p>			

		<ul style="list-style-type: none"><li>Examination of the peripheral nervous system: excitability and conduction.</li><li>Experimental examination of reflexes. Performing clinically important reflexes</li><li>Performing method of brain activity</li><li>Examination of autonomic nervous system functioning</li><li>Testing senses for vision, sound, equilibrium, taste and smell</li><li>Examination of endocrine system functions in experimental animals</li></ul>														
13.	Interconnection between subjects	Related to all subjects of the faculty. Signature from this subject provides attendance for following subjects: Microbiology and parasitology 2, Pathology 1. Passed exam provides attendance for following subjects: Clinical examination 2, Pharmacology, Transfusiology, Pathology 2														
14.	Description of the subject's study and working methods in details	Interactive lectures of theoretical and practical teaching, introducing experimental animal models and computer learning by virtual models and videos.														
15.	Total available time frame	180														
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	45												
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	45												
		16.3.	Practice: hours													
17.	Other forms of activities	17.1.	Project tasks: hours													
		17.2.	Individual tasks: hours													
		17.3.	Studying at home: hours	90												
18.	Requirements for signature	The student has to obtain minimum points for each course attendance <table><tr><td></td><td>points</td><td>min</td><td>max</td></tr><tr><td>Theoretical course attendance</td><td></td><td>1</td><td>3</td></tr><tr><td>Practical course attendance</td><td></td><td>8</td><td>11</td></tr></table>				points	min	max	Theoretical course attendance		1	3	Practical course attendance		8	11
	points	min	max													
Theoretical course attendance		1	3													
Practical course attendance		8	11													
Methods of assessment																
19.1.	Tests: points			min max												
		Test I		12 20												
		Test II		12 20												
		Test III		12 20												
19.2.	Seminar paper/project, written and oral presentation: points			min max												
		Seminar		1 3												
19.3.	Final exam: points			min max												
		Final exam		14 23												
20.	Grading criteria (points/grade)	Up to 59 points	5 (five) (F)													
		From 60 to 68 points	6 (six) (E)													
		From 69 to 76 points	7 (seven) (D)													
		From 77 to 84 points	8 (eight) (C)													
		From 85 to 92 points	9 (nine) (B)													
		From 93 to 100 points	10 (ten) (A)													

21.	Methods of monitoring the quality of the teaching process			Checking the student’s attendance and student’s anonymous evaluation of the teaching process			
22.	Literature						
	22.1.	Mandatory literature					
		Number		Author	Title	Publisher	Year
		1.	Guyton AC, Hall JE.	Textbook of Medical Physiology 14 <sup>th</sup> edition	London: Elsevier	2020	
		2.	Costanzo LS.	Physiology	London: Elsevier	2006	
		3.	Maleska V, et al.	Manual Physiology 2	Ss Cyril and Methodius University, Faculty of Medicine	2012	
	22.2.	Additional literature					
Number		Author	Title	Publisher	year		
1.		Widmaier E, Raff H, Stran K.	Vander’s Human Physiology: The Mechanisma of Body Function	New York: McGraw-Hill Education	2013		

Number:22

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>PATHOPHYSIOLOGY 1</b>			
2.	<b>Code</b>	MED 223			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty od Medicine, Department of Pathophysiology and Nuclear Medicine			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Second (II)	Semester	Forth (IV)
7.	<b>ECTS credits</b>	7			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Venjamin Majstorov, MD, PhD - responsible professor *Lectures held by the professors from the Department of Pathophysiology and Nuclear Medicine			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes</b>	Preconditions for attending the classes: signature of Physiology 1. In order to take the final exam, the student should obtain the minimum			

	<b>and taking the subject's exam</b>	points in the two continual assessments. If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.		
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• Object and methods of pathophysiology (etiology and pathogenesis of the diseases with experimental and clinical methods)</li> <li>• General mechanisms of compensation and decompensation in disorders caused by the pathological influences of external factors</li> <li>• Factors of the general reactivity and the immunity, their disorders and relationship with external medium</li> <li>• Mechanisms of initiation and manifestation of pathological situations with general functional disturbances</li> <li>• Mechanisms of metabolic disorders</li> </ul>		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Health, disease, death; etiology and pathogenesis, compensation, decompensation, sufficiency, insufficiency</li> <li>• Pathogenic influence of the environmental (external) factors (physical, chemical, biological and psychical factors)</li> <li>• General reactivity and immunity, inheritance and environment</li> <li>• Disorders of innate immunity (complement, phagocytosis, interferon)</li> <li>• Disorders of adaptive immunity, hypersensitivity, immunodeficiency, autoimmunity, transplant reaction</li> <li>• Disturbances in pathological situations with general functional disorders (hypoxia, fever, fatigue, peripheral circulatory disorders), pathophysiology of the geriatric diseases</li> <li>• Disorders of the energetic metabolism and of the protein, carbohydrate, lipid, water, electrolyte and vitamin metabolism</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>• Practice on experimental animals, demonstration on students, presentation of in vitro and in vivo methods</li> </ul>		
13.	<b>Interconnection between subjects</b>	<p>Related to all subjects in the study program</p> <p>Signature from this subject provides attendance for following subjects: Pathophysiology 2, Microbiology and parasitology 2, Pathology 1, Clinical examination 1.</p> <p>Passed subject provides attendance to following exams: Pathophysiology 2, Clinical examination 1 and 2.</p>		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching during lectures and practical trainings, independent study by using textbooks, practical exercises, computer-assisted learning.		
15.	<b>Total available time frame</b>	210 classes		
16.	<b>Forms of teaching activities</b>	16.1.	Theoretical lessons, hours	45 classes

		16.2.	Practical course (laboratory, auditory), seminars, team work: hours	60 classes
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	105 classes
18.	Requirements for signature	The student is required to actively follow all of the planned activities.		
19.	Methods of assessment			
	19.1.	Tests: points	<div>min – max</div> <b>Continual assessment – 2 tests</b> <div>1. Health, disease, death; etiology, pathogenesis, compensation, decompensation, sufficiency, insufficiency. Pathogenic influences of the environmental (external) factors; General reactivity and immunity; Disturbances in the course of pathological conditions with general functional disorders</div> <div>18 - 30 points</div> <div>2. Disorders of metabolism and peripheral circulation</div> <div>18 - 30 points</div>	
	19.2.	Seminar paper/project, written and oral presentation: points		
	19.3.	Final exam: points	<div>min-max</div> <b>Final exam: final test + oral examination</b> <div>Final test: analysis of experimental models or tests for disorders detection</div> <div>6 - 10 points</div> <div>Oral exam: theoretical discussion for the application of experimental models or tests</div> <div>6 - 10 points</div>	

			<b>Completion exam</b> - combination of the failed tests (in written form) plus final test and final oral exam <b>Full exam</b> - combination of the two failed tests plus final test and final oral exam  Active participation: points Theoretical course (% of presence)1 - 5 <ul style="list-style-type: none"><li>min.30%1 point</li><li>31-70%2 points</li><li>71-100%5 points</li></ul> Practical course11 - 15			
20.	<b>Grading criteria (points/grade)</b>	Up to 59 points	5 (five) (F)			
		From 60 to 68 points	6 (six) (E)			
		From 69 to 76 points	7 (seven) (D)			
		From 77 to 84 points	8 (eight) (C)			
		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21.	<b>Methods of monitoring the quality of the teaching process</b>	Anonymous evaluation by the students for the teaching staff.				
22.	<b>Literature</b>					
	22.1.	<b>Mandatory literature</b>				
		Number	Author	Title	Publisher	Year
		1.	McPhee SJ, Ganong WF.	Pathophysiology of disease. An introduction to clinical medicine	New York: Langee medical Books/McGraw-Hill	2003
	22.2.	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Vaskova O, Miceva Ristevska S, Pop Gjorceva D, Miladinova D, Loparska S, Majstorov V.	General pathological physiology	Skopje: RC Copy	2013

		2.	Vaskova O, Miceva Ristevska S, Pop Gjorceva D, Miladinova D, Loparska S.	Practical course for general and special pathological physiology	Skopje: Boro Grafika	2013
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Number:23

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	MICROBIOLOGY AND PARASITOLOGY 1			
2.	Code	MED-224			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Microbiology and parasitology			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Second (II)	Semester	Fourth (IV)
7.	ECTS credits	4			
8.	Professor (when more professors, responsible professor is assigned)	Associate Prof. Maja Jurhar Pavlova, PhD, MD - responsible professor *Lectures held by the professors from the Department of of Microbiology and parasitology			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Passed exam: Cell morphology and physiology Signature: Introduction to Immunology In order to take final exam, the student has to win a minimum of 60% of the two continual assessment tests The minimum passing score for the final examination is 60% out of the total points			
11.	Subject program goals (competences) and study results:	<ul style="list-style-type: none"> <li>• Introducing students with the world of microorganisms,</li> <li>• To acquire knowledge about different types of microorganisms, studying their morphology and physiology,</li> <li>• To become familiar with the prevalence of microorganisms in different eco systems and their mutual associations, including the normal microflora of the host,</li> <li>• To study the genetics of microorganisms,</li> <li>• To gain knowledge about the virulence factors of microorganisms and to penetrate in more detail into the pathogenesis of the infections they cause,</li> <li>• To acquire skills for performing successful and accurate microbiological diagnosis in various infections conditions,</li> <li>• To acquire skills for performing the methods of testing the sensitivity of etiological agents to antibiotics, which is an important prerequisite for successful therapy (of exceptional importance for their future medical practice)</li> </ul>			



		<ul style="list-style-type: none"> <li>• To gain comprehensive understanding of microorganisms and their role in the field of medicine</li> <li>• To develop communication and critical thinking as essential skills in microbiology</li> <li>• Comprehensive Interpret of results of different microbiological analyses</li> <li>• Application of microbiological methods to different laboratory and clinical situations</li> <li>• Ability to communicate and collaborate with other disciplines in microbiological context</li> <li>• Properly prepare and view specimens for examination using microscopy</li> <li>• Identification of microorganism by implementing adequate methods</li> <li>• Practice safety in microbiological laboratory, by implementation of different protective procedures.</li> </ul>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Introduction to Microbiology</li> <li>• Morphology and structure of microorganisms</li> <li>• Physiology of microorganisms</li> <li>• Genetics of microorganisms</li> <li>• The effects of physical and chemical factors on microorganisms</li> <li>• Distribution of microorganisms and interactions</li> <li>• Pathogenicity of microorganisms and pathogenesis of infections</li> <li>• Basic principles of microbiological diagnosis</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>• Purpose and methods of work in the microbiological laboratory</li> <li>• Microscopic examination of microorganisms</li> <li>• Isolation and cultivation of microorganisms</li> <li>• Examination of the biochemical activity of microorganisms</li> <li>• Sterilisation and disinfection</li> <li>• Application of serological reactions in laboratory diagnostics</li> <li>• Techniques to investigate the antimicrobial affect</li> </ul> <p>Proper sampling, transporting and processing of samples for microbiological examination</p>
13.	<b>Interconnection between subjects</b>	<p>Related to all subjects in the study program</p> <p>Signature from this subject provides attendance for following subjects: Microbiology and parasitology 2 and Clinical examination 1</p> <p>Passed subject provides attendance to following exams: Microbiology and parasitology 2.</p>
14.	<b>Description of the subject's study and working methods in details</b>	<ul style="list-style-type: none"> <li>• Interactive theoretical teaching</li> <li>• Independent learning</li> <li>• Exercises/Seminars</li> <li>• Learning based on the problems and their solving</li> <li>• Independent analysis of microscopic preparations, bacterial cultures, biochemical reactions for identification of bacteria</li> <li>• Independent interpretation of microbiological results with special view of the selection of the appropriate antibiotic in the therapy of infections</li> </ul>

		<ul style="list-style-type: none"><li>• Presentation of seminars accompanied by discussion</li><li>• Seminars:<ul style="list-style-type: none"><li>• Specifics in the morphology and physiology of microorganisms</li><li>• Basic principles of microbiological diagnosis</li></ul></li></ul>				
15.	Total available time frame	120				
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	30		
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	30		
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours	60		
18.	Requirements for signature	In order to get a signature, the student must attend theoretical and practical classes and obtain at least 70% of the points				
19.	Methods of assessment					
	19.1.	Tests: points		First continual assessment (20 points) Second continual assessment (30 points)		
	19.2.	Seminar paper/project, written and oral presentation: points		Power point presentation of the seminar work (processing of samples, processing of cases, analysis of microbiological results) (3 points)		
	19.3.	Final exam: points		Oral examination (34 points)		
	19.4.	Active participation: points		Theoretical course (3 points) Practical course (10 points)		
20.	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Anonymous evaluation by students on the subject, teaching staff and associates participating in the teaching			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Brooks G, Karen C. Carroll KC, Butel J, Morse S, Meizner T.	Jawetz, Melnick & Adelberg’s Medical Microbiology – 26 <sup>th</sup> Edition	Chicago: McGraw-Hill Education / Medical	2012

		2.	Greenwood D, Slack RCB, HHBarer Mr, Irving ML	Medical Microbiology: With STUDENTCONSULT online access (Greenwood, Medical Microbiology) 18 <sup>th</sup> Edition	Churchill Livingstone	2012
		3.	Gary W. Procop, Deirdre L. Church, Geraldine S. Hall; William M. Janda; Elmer W. Koneman; Paul C. Schreckenberger;	Koneman's Color Atlas and Textbook of Diagnostic Microbiology 7th Edition	Jones & Bartlett Learning	2016
	22.2.	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Department's Teachers	Authorized lectures from the Department of microbiology and parasitology		

Number:24

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>HYGIENE</b>			
2.	<b>Code</b>	MED-225			
3.	<b>Study program</b>	General medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Hygiene			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Second (II)	Semester	Fourth (IV)
7.	<b>ECTS credits</b>	5			
8.	<b>Professor (when more professors, responsible)</b>	Prof. Gordana Ristovska PhD, MD, - responsible professor *Lectures held by the professors from the Department of Hygiene			

	<b>professor is assigned)</b>	
9.	<b>Language of the study</b>	English
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: None The student has to win a minimum points of the continual assessments 1 and 2, after that he/she can approach to the final exam.
11.	<b>Subject program goals (competences) and study results:</b>	Adoption of the knowledge, skills, and basic principles of environmental health, health risk assessment of air pollution, climate change, drinking water and surface water pollution, ionising and non ionising radiation, environmental noise, environmental health aspects of school environment, housing and health care institutions, health risks associated with unsafe food and unhealthy diet.
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Ecological concept of health, ecotoxicology, risk assessment and preventive measures</li> <li>• Environmental health</li> <li>• Air pollution, adverse health effects and preventive measures</li> <li>• Climate change and health</li> <li>• Environmental health aspects of drinking water and water supply</li> <li>• Environmental health aspects of surface and waste waters</li> <li>• Environmental health aspects of the waste, with particular emphases on medical waste</li> <li>• Physical factors – ionising and non-ionising radiation, environmental noise</li> <li>• Environmental health aspects of chemicals- persistent organic pollutants and metals</li> <li>• Environmental health aspects of school environment and characteristics of the school children morbidity</li> <li>• Environmental health aspects housing, settlements and health care institutions</li> <li>• Preparedness and response in emergency and crisis: rapid detection and elimination of the environmental risks</li> <li>• Food safety and nutrition</li> <li>• Food safety and food borne diseases with preventive measures, Macronutrients and micronutrients, basic principles for healthy diet and dietotherapy</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>• Methodology for monitoring of air pollution and health statistics methods for monitoring of adverse health effects;</li> <li>• Climate change and current national policies for reducing adverse health effects;</li> <li>• Drinking water and monitoring of drinking water safety;</li> <li>• Ionizing and non ionising radiation and health risk assessment;</li> <li>• Environmental noise monitoring and mapping, health risk assessment</li> </ul>

		<ul style="list-style-type: none"><li>• School hygiene: implementation and interpretation of WASH questionnaire for hygiene in school environment;</li><li>• Management of medical waste and related potential hazards;</li><li>• Biological and chemical food contamination and preventive measures, national policy for reducing foodborne diseases;</li><li>• Methods for nutrition status assessment of the population groups, methods for determination of nutritive value of meals, methods for planning nutrition for different population groups</li></ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program Passed subject provides attendance to VII semester.		
14.	<b>Description of the subject's study and working methods in details</b>	Lectures with interactive approach; Practical lessons		
15.	<b>Total available time frame</b>	150 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	30
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	45
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	75
18.	<b>Requirements for signature</b>	<p>Conditional criteria: The student must participate at the theoretical and practical courses in order to score minimum points to obtain signature. The minimum requirements for that are as follows:</p> <p>Theoretical course: 100% presence - 5 points 80% presence - 4 points 60% presence - 3 points 50% presence - 2 points 40% presence - 1 points</p> <p>Practical course : Presence at 11 exercise - 15 points Presence at 10 exercise - 13 points Presence at 9 exercise - 11 points Presence at 8 exercises or less – the student will be reevaluated for some of the exercises he/she missed. If positively reevaluated - the student will gain 9 points.</p>		
19.	<b>Methods of assessment</b>			
	19.1.	Tests: points	points	
			Continuous testing	min max
			1. Environmental health	21 35
			2. Food Safety and Nutrition	15 25

	19.2.	Seminar paper/project, written and oral presentation: points	/			
	19.3.	Final exam: points	Oral exam (integrative), from min 15 to max 20 points It is a compulsory part of the exam consisting of 2 questions about the integrative knowledge that is essential for understanding the hygiene, environmental health and the preventive measures. The student has to win a minimum points of the test 1 and test 2, after that he/she can approach to the final exam. Otherwise the exam is considered failed			
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Tulchinsky T, Varavikova E.	The New Public Health, 3rd Edition	New York: Elsevier	2015
		2.	Wallace/Maxcy-Rosenay-Last	Public Health & Preventive Medicine	Chicago: The Mc Graw-Hill Companies. Inc	2008
		3.	Kochubovski M, Ristovska G, Spiroski I, Petrova A.	Manual for hygiene and Henvironmental health	Skopje, Faculty of Medicine	2021
		22.2.	Additional literature			
	Number		Author	Title	Publisher	year
	1.		De Bruyne L, Pinna K.	Nutrition for health and health care	Boston: Cengage	2020
	2.		WHO Regional Office for Europe	A healthy environment in the WHO European Region: why it matters and what steps we can take to improve health.	Copenhagen: WHO Regional Office for Europe	2023

		3.	Food and Agriculture Organization	Climate change: Unpacking the burden on food safety.	FAO	2020
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Number:25

Attachment 3		Integrated cycle of studies – Subject program									
1.	Subject	BASICS IN SCIENTIFIC WORK									
2.	Code	MED 226									
3.	Study program	General Medicine									
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty od Medicine, Department of Internal Medicine									
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies									
6.	Academic year/semester	Year	Second (II)	Semester	Fourth (IV)						
7.	ECTS credits	1.5									
8.	Professor (when more professors, responsible professor is assigned)	Prof.Ljubica Georgievska-Ismail MD, PhD - responsible professor *Lectures held by the professors from the Department of Internal Medicine									
9.	Language of the study	English									
10.	Preconditions for attending the classes and taking the subject’s exam	<p>Preconditions for attending the classes: finished first year. In order to take the exam the student needs to score a minimum of points from attending theoretical and practical classes</p> <table><tr><td></td><td>min – max</td></tr><tr><td>Theoretical course</td><td>6- 12 points</td></tr><tr><td>Practical course</td><td>6 – 12 points</td></tr></table>					min – max	Theoretical course	6- 12 points	Practical course	6 – 12 points
	min – max										
Theoretical course	6- 12 points										
Practical course	6 – 12 points										
11.	Subject program goals (competences) and study results:	<ul style="list-style-type: none"><li>• The essence and meaning of scientific research and the principles of the scientific method</li><li>• The components of the research process and their understanding</li><li>• Finding sources for a scientific research project and acquiring basic knowledge for a critical review of tchem</li><li>• The basic principles of research ethics, teamwork and the meaning of authorship</li><li>• The basic procedures and rules for the preparation, publication and/or presentation of the results of scientific research</li><li>• Evidence-based medicine and its application</li></ul>									
12.	Subject content in details by chapters and units, with	<b>Theoretical course:</b> <ul style="list-style-type: none"><li>• Introduction to the subject, obligations, expectations</li><li>• Science and scientific method - what is it, history, meaning and</li></ul>									

	<b>study results for every chapter</b>	<div>principles</div> <ul style="list-style-type: none"><li>• Terminology in science, types of evidence, strength of recommendations</li><li>• Design of a scientific research project</li><li>• Use of biomedical databases</li><li>• Ethics in scientific research work and responsible behavior in science</li><li>• Scientific paper construction and preparation for publication, style, language and presentation</li><li>• Critical assessment of parts of a scientific paper</li><li>• Evidence-based medicine and its application</li></ul> <div><b>Practical course:</b> Exercise 1. How to choose a topic for scientific research work, searching for sources on the Internet by keywords, forming a hypothesis Exercise 2. Ethics in science - panel discussion based on given examples (plagiarism, conflict of interest, copyright protection) Exercise 3. Planning and organizing scientific research - exercise on a given topic with special reference to material and methods Exercise 4. Parts of the paper: Critical review of the parts of the paper (title, design, material and methods, results, discussion, conclusion) Exercise 5. Paper presentation on assigned material</div>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program Passed subject provides attendance to VII semester.		
14.	<b>Description of the subject’s study and working methods in details</b>	Interactive teaching, exercises, discussion		
15.	<b>Total available time frame</b>	45 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	10+2
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	
		16.3.	Practice: hours	18
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18.	<b>Requirements for signature</b>	In order to get a signature, the student needs to score a minimum of points from attending theoretical and practical classes.		
19	<b>Methods of assessment</b>			
	19.1.	Tests: points	Mini-quizzes after the practical teaching Min 23- Max 38	
	19.2.	Seminar paper/project, written and oral presentation: points	Max 5 points	
	19.3.	Final exam: points	Final written test= min 27 - max 45 points	
20.	<b>Grading criteria (points/grade)</b>		Up to 59 points	5 (five) (F)
			From 60 to 68 points	6 (six) (E)
			From 69 to 76 points	7 (seven) (D)
			From 77 to 84 points	8 (eight) (C)



		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process	Students' evaluation				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Georgievska Ismail Lj, editor and co-author	Basics in scientific work-textbook for medical students and health professions	Ss Cyril and Methodius University in Skopje, Faculty of Medicine	2022
		2.	Teaching materials on English for students prepared by faculty			
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
1.		Teaching materials on English for students prepared by faculty				

Number:26

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>PATHOPHYSIOLOGY 2</b>			
2.	<b>Code</b>	MED 311			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Medical Faculty, Department of Pathophysiology and Nuclear Medicine			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Third (III)	Semester	Fifth (V)
7.	<b>ECTS credits</b>	4.5			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Venjamin Majstorov, MD, PhD - responsible professor *Lectures held by the professors from the Department of Pathophysiology and Nuclear Medicine			

9.	Language of the study	English		
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: passed exam of Physiology 1, Signature of Physiology 2, Signature of Pathophysiology 1. In order to take the final exam, the student should obtain the minimum points in the two continuous assessments. Preconditions for taking the exam is passed Pathophysiology 1		
11.	Subject program goals (competences) and study results:	To get introduced with mechanisms of initiation, course and outcome of the hematopoietic, heart and vascular, lung, kidney, gastrointestinal, liver and bile and endocrine disorders		
12.	Subject content in details by chapters and units, with study results for every chapter	<b>Theoretical course</b> <ul style="list-style-type: none"> <li>• Disorders of hematopoietic system</li> <li>• Disorders of cardiovascular system</li> <li>• Disorders of respiratory system</li> <li>• Disorders of renal system</li> <li>• Disorders of gastrointestinal system</li> <li>• Disorders of hepatobiliary system</li> <li>• Disorders of endocrine system</li> </ul> <b>Practical course:</b> Practice on experimental animals, demonstration on students, presentation of in vitro and in vivo methods		
13.	Interconnection between subjects	Related to all subjects in the study program Signature from this subject provides attendance for following subjects: Clinical examination 2, Pathology 2, Pharmacology, Transfusiology Passed subject provides attendance to VII semester.		
14.	Description of the subject's study and working methods in details	Interactive teaching during lectures and practical trainings, independent study by using textbooks, practical exercises, computer-assisted learning.		
15.	Total available time frame	135 classes		
16.	Forms of teaching activities	16.1.	Theoretical lessons, hours	30
		16.2.	Practical course (laboratory, auditory), seminars, team work: hours	30
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	75
18.	Requirements for signature	The student is required to actively follow all of the planned activities. <b>Conditional criteria for assessment of knowledge:</b> In order to get a signature, the student should obtain minimum points in both theoretical and practical courses. In order to take the final exam, the student should obtain the minimum points in the two continuous assessments. If the student has not obtained the minimum points in the continuous assessments, he/she will be obligated to pass them before the final exam.		
19.	Methods of assessment			

	19.1.	Tests: points	<div>min – max</div> <div><b>Continual assessment – 2 tests</b></div> <div>1. Disorders of hematopoietic, cardiovascular, respiratory and renal systems</div> <div>18 - 30 points</div> <div>2. Disorders of gastrointestinal, hepatobiliary and endocrine systems</div> <div>18 - 30 points</div>
	19.2.	Seminar paper/project, written and oral presentation: points	
	19.3.	Final exam: points	<div>min-max</div> <div><b>Final exam: final test + oral examination</b></div> <div>1. Final test: analysis of experimental models or tests for disorders detection</div> <div>6 - 10 points</div> <div>2. Oral exam: theoretical discussion for the application of experimental models or tests</div> <div>6 - 10 points</div> <div><b>Completion exam</b> - combination of the failed tests (in written form) plus final test and final oral exam</div> <div><b>Full exam</b> - combination of the two failed testes plus final test and final oral exam</div> <div>Active participation: points</div> <div>Theoretical course</div> <div>(% of presence)</div> <div><div>1 - 5</div><div><div>• min.30%</div><div>1 point</div></div><div><div>• 31-70%</div><div>2 points</div></div><div><div>• 71-100%</div><div>5 points</div></div></div> <div>Practical course</div> <div>12 - 15</div>
20.	Grading criteria (points/grade)		<div>Up to 59 points</div> <div>5 (five) (F)</div> <div>From 60 to 68 points</div> <div>6 (six) (E)</div> <div>From 69 to 76 points</div> <div>7 (seven) (D)</div> <div>From 77 to 84 points</div> <div>8 (eight) (C)</div>

		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process	Anonymous evaluation by the students for the teaching staff.				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	McPhee SJ, Ganong WF.	Pathophysiology of disease. An introduction to clinical medicine.	New York: Langee medical Books/McGraw-Hill	2003
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Vaskova O, Miceva Ristevska S, Pop Gjorceva D, Miladinova D, Loparska S, Majstorov V:	Special pathological physiology	Skopje: RC Copy	2012
	2.	Vaskova O, Miceva Ristevska S, Pop Gjorceva D, Miladinova D, Loparska S.	Practical course for general and special pathological physiology	Skopje: Boro Grafika	2013	

Number:27

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
1.	<b>Subject</b>	<b>MICROBIOLOGY AND PARASITOLOGY 2</b>
2.	<b>Code</b>	MED 312
3.	<b>Study program</b>	General Medicine

4.	<b>Institution (unit, institute, chair, department)</b>	University Ss. Cyril and Methodius in Skopje, Faculty of Medicine, Department of Microbiology and Parasitology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Third (III )	Semester	Fifth (V)
7.	<b>ECTS credits</b>	6			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Associate Prof. Maja Jurhar Pavlova PhD, MD - responsible professor *Lectures held by the professors from the Department of Microbiology and parasitology			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Passed exam: Physiology 1 Signature: Physiology 2; Pathophysiology 1; Microbiology and parasitology 1. In order to take final exam, the student has to win a minimum of 60% of the two continual assessment tests.			
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• Specific knowledge of important bacteria relevant to human medicine;</li> <li>• Solid knowledge of important viruses relevant to human medicine;</li> <li>• The necessary knowledge about medically important fungi;</li> <li>• More specific knowledge of medically important parasites</li> <li>• To gain comprehensive understanding of microorganisms and their role in the field of medicine</li> <li>• To develop communication and critical thinking as essential skills in microbiology</li> <li>• Comprehensive Interpret of results of different microbiological analyses</li> <li>• Application of microbiological methods to different laboratory and clinical situations</li> <li>• Ability to communicate and collaborate with other disciplines in microbiological context</li> <li>• Properly prepare and view specimens for examination using microscopy</li> <li>• Identification of microorganism by implementing adequate methods</li> <li>• Practice safety in microbiological laboratory, by implementation of different protective procedures.</li> </ul>			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Medical bacteriology: Classification of medical important bacteria; Gram positive cocci; Gram negative cocci; Gram positive bacilli; Gram negative bacilli; Intracellular bacteria; Spiral bacteria</li> <li>• Medical virology: Classification and nomenclature of viruses; RNA viruses; DNA viruses</li> <li>• Medical mycology: Triggers superficial mycoses, Triggers systemic mycoses, Medical Parasitology, Medical significant protozoa, Medical significant helminths, Intra-hospital infections</li> </ul>			

		<b>Practical course:</b> <ul style="list-style-type: none"><li>Microbiological diagnosis of infections caused by pyogenic cocci; Microbiological diagnosis of infections involving the respiratory tract; Microbiological diagnosis of infections involving the urogenital tract ; Microbiological diagnosis of infections involving the gastrointestinal tract; Microbiological diagnosis of infections involving the central nervous system; Microbiological diagnosis of intra-hospital infections; Microbiological diagnosis of anaerobic infections ; Laboratory diagnosis of infections caused by fungi; Laboratory diagnosis of infections caused by protozoa; Laboratory diagnosis of infections caused by helminthes.</li></ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program Passed subject provides attendance to VII semester.		
14.	<b>Description of the subject's study and working methods in details</b>	<ul style="list-style-type: none"><li>Interactive theoretical teaching</li><li>Independent learning</li><li>Exercises</li><li>Seminars</li><li>Learning based on their problems and their solving</li><li>Independent analysis of microbiological and parasitological results</li><li>Independent interpretation of microbiological and parasitological results</li></ul>		
15.	<b>Total available time frame</b>	180		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	45
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	30
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	105
18.	<b>Requirements for signature</b>	In order to get a signature, the student must attend theoretical and practical classes and obtain at least 70% of the points		
19.	<b>Methods of assessment</b>			
	19.1.	Tests: points	First continuous exam (12- 20 points) Second continuous exam (21-35 points)	
	19.2.	Seminar paper/project, written and oral presentation: points	Power point presentation of the seminar work (processing of samples, processing of cases, analysis of	

			microbiological results) (3 points)			
	19.3.	Final exam: points	Oral examination (17- 29 points)			
	19.4.	Active participation: points	Theory course (1- 3 points) Practical course (6- 10 points)			
20.	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process	Anonymous evaluation by students on the subject, teaching staff and associates participating in the teaching				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Brooks G, Karen C. Carroll KC, Butel J, Morse S, Meizner T.	Jawetz, Melnick & Adelberg’s Medical Microbiology – 26 <sup>th</sup> Edition	Chicago: McGraw-Hill Education / Medical	2012
		2.	Greenwood D, Slack RCB, Barer HH, Irving ML	Medical Microbiology: With STUDENTCONSULT online access (Greenwood,Medical Microbiology) 18 <sup>th</sup> Edition	London: Churchill Livingstone	2012
		3.	Procop GW, Church DL, Geraldine S. Hall GS, Janda WM, Koneman EW, Schreckenberger PC	Koneman's Color Atlas and Textbook of Diagnostic Microbiology 7th Edition	Burlington: Jones & Bartlett Learning	2016
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Teaching materials on English for students prepared by faculty Authorized lectures from the Department of microbiology and parasitology			

Number: 28

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	PATHOLOGY 1			
2.	Code	MED 313			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Pathology			
5.	Degree of education (first, second, third cycle)	Integrated 6 - year studies			
6.	Academic year/semester	Year	Third (III)	Semester	Fifth (V)
7	ECTS credits	9			
8.	Professor (when more professors, responsible professor is assigned)	Associate Prof. Magdalena Bogdanovska Todorovska, PhD, MD - responsible professor *Lectures held by all professors from the Department of Pathology			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: Passed exams Physiology 1, Anatomy 3, Histology and Embryology 2, Signatures from Physiology 2 and Pathophysiology 1. In order to take the final exam, the student has to have at least a minimum points from the periodical evaluation, or get at least 30% of the total number of points provided for continous check of knowledge. Active participation (points) min – max Theoretical course 1-2 Practical course 4–6			
11.	Subject program goals (competences) and study results:	The student will get knowledge about the causes and general mechanisms of development of the diseases, as well as to understand the structural and functional changes in the cells, tissues and organs by using the routine morphological and contemporary molecular techniques. While studing general pathology, the student will learn about the basic cellular and tissue responses to various pathological stimuli. In the special section, the student will learn the characteristic responses and changes during various pathological conditions of RES, cardiovascular and respiratory system. The student will learn the macroscopical and histological methods of analysis of the morphological changes in the organs, tissues and cells, based on which the diagnosis is established and therapy is planned.			
12.	Subject content in details by chapters and units, with study results for every chapter	<b>Theoretical course:</b> <ul style="list-style-type: none"><li>• General pathology and part of the special pathology:</li><li>• Cellular injury, adaptations and death</li><li>• Hemodynamic disorders, thrombosis and schock</li><li>• Acute and chronic inflammation</li><li>• Tissue regeneration and reparation</li><li>• Specific inflammation</li></ul>			



		<ul style="list-style-type: none"><li>Genetic diseases</li><li>Immunopathology</li><li>Environmental and nutritional diseases</li><li>Pathology of the neoplasia</li><li>Pathology of the reticuloendothelial system</li><li>Pathology of the cardiovascular system</li><li>Pathology of the respiratory system</li></ul> <p><b>Practical course:</b> Learning the skills of microscopic analysis and diagnostics on histopathological slides, dissection and macroscopic analyses of surgical specimens, autopsy technique, interpretation of the changes with determination of the basic disease and immediate cause of death; altogether, practical application of the acquired theoretical knowledge.</p>	
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program. Signature provides attendance for following subjects: Clinical examination 2, Pathology 2, Pharmacology, Transfusiology Passed subject provides attendance to following exams: Pathology 2	
14.	<b>Description of the subject's study and working methods in details</b>	Interactive lectures, practical exercises / seminars	
15.	<b>Total available time frame</b>	270 hours	
16.	<b>Forms of teaching activities</b>	16.1. Lessons – theoretical lessons, hours 75	
		16.2. Practical lessons (laboratory, auditory), seminars, team work: hours 60	
		16.3. Practice: hours Facultative	
17.	<b>Other forms of activities</b>	17.1. Project tasks: hours Facultative	
		17.2. Individual tasks: hours Facultative	
		17.3. Studying at home: hours 135 classes	
18.	<b>Requirements for signature</b>	In order to get a signature, the student has to attend the theoretical lessons (1-2 points), practical exercises (4-6 points) and the seminars (1-2 points), and to achieve at least minimum 6 points.	
19.	<b>Methods of assessment</b>		
	19.1.	Tests: points	Continual assessment * points 24-40  One written test covering the following areas of Pathology 1: Cellular injury, adaptations and death Hemodynamic disorders, thrombosis and shock Acute and chronic inflammation Tissue regeneration and reparation Specific inflammation Genetic diseases Immunopathology Environmental and nutritional pathology

			In order to take the final exam, the student has to have at least a minimum points from the continuous assessment (24 points), or get at least 30% of the total number of points provided for continous check of knowledge (13 points); during the exam session the student must take an examination for the failed continuous assessment first, and afterwards the student may proceed to the final exam. The final grade is formed according to the grading table, based on the sum of the points earned from all activities, continuous checks of knowledge and the final exam.			
	19.2.	Seminar paper/project, written and oral presentation: points	1-2 points			
	19.3.	Final exam: points	Min-max points Oral exam* 15-25 Practical exam** 15-25  *Oral exam (integrative) – 4 questions taken from the whole Pathology 1 subject program  ** Practical exam (catalogue skills) microscopical analysis and diagnosis of 4 histological slides, autopsy or dissection and macroscopical analysis of surgical specimens with theoretical discussion about the topic considered.  The student is obligated to achieve a minimum of the intended points of the assessment to pass the continual assessment. Otherwise, the final exam is considered failed.			
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Student`s anonymous evaluation of the subject, teachers and associates involved in the educational process.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year

		1.	Kumar V, Cotran RS, Robbins SL.	Robbins Basic Pathology, 7 <sup>th</sup> ed.	Philadelphia: W.B. Saunders Company	2003
		2.	Kumar V, Abbas AK, Aster JC, Fausto N.	Pathologic Basis of Disease, 8 <sup>th</sup> ed.	Philadelphia: W.B. Saunders Company	2010
	22.2.	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Klatt EC	Robbins and Cotran Atlas of Pathology	Philadelphia: W.A. Saunders	2010

Number:29

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>CLINICAL EXAMINATION 1 and 2</b>			
<b>2.</b>	<b>Code</b>	MED - 314			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Internal Medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Third (III)	Semester	Sixth (VI)
<b>7</b>	<b>ECTS credits</b>	13			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Assistant professor Beti Todorovska, MD, PhD - responsible professor *Lectures held by the professors from the Department of Internal Medicine, Department of Pediatrics, Department of Surgery.			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: <b>For Clinical Examination 1:</b> passed exams from Anatomy 3 and Physiology 1, obtained signature from Microbiology and Parasitology 1 and Pathophysiology 1. <b>For Clinical Examination 2:</b> right to apply for the final exam			

		for Pathology 1, obtained signature from Pathophysiology 2 and Clinical Examination 1, passed exams from Biochemistry 1 and Physiology 2. Preconditions for taking the exam: passed Pathophysiology 1.		
11.	<b>Subject program goals (competence):</b>	Acquiring theoretical knowledge and skills during patient exams and additional examination/investigation in clinical medicine.		
12.	<b>Subject content in details by chapters and units</b>	<b>Theoretical course (short contents):</b> <ul style="list-style-type: none"> <li>Techniques for obtaining medical history in children and adults (with appropriate particularities in the child population, in surgical patients, as well as patients with internal diseases;</li> <li>General status in children and adults;</li> <li>Principles of examination by systems, symptom characteristics, signs and findings from paraclinical examinations for internal diseases by systems: cardiovascular, respiratory, endocrine, urogenital, digestive, hematopoietic and locomotory system, as well as particularities of clinical examination in intoxications;</li> <li>Particularities of medical history, clinical examination and targeted paraclinical examinations/investigations in surgical conditions, diseases and trauma: symptoms, physical findings and special examinations in surgical conditions involving the head (in children and adults), examination of a patient with a chest injury and pneumothorax, examination of a patient with an acute abdomen and abdominal trauma, diagnosis and physical findings of injuries to the musculoskeletal system, injuries to the hand and peripheral nerves, thermal and radiation injuries, examination and objective findings in diseases of the male genitalia – urogenital system, mammary diseases, lymph nodes (axillary and of the neck);</li> <li>Characteristics of medical history, clinical examination and paraclinical examinations in the pediatric population, as well as particularities of the diseases of the childhood age.</li> </ul> <b>Practical course:</b> <ul style="list-style-type: none"> <li>Applying the theoretical knowledge in practice;</li> <li>The student shall gain skills for mastering of techniques and methods for taking patient medical history, clinical assessment of an ill patient, differential-diagnostic thinking, assessment of the need and interpretation of the results from the paraclinical examinations.</li> </ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program. Passed subject provides attendance to VII semester.		
14.	<b>Description of the subject's study and working methods in details</b>	Learning methods: Interactive theoretical lectures, active practice on patients.		
15.	<b>Total available time frame</b>	390 hours		
16.	<b>Forms of teaching activities</b>	16.1	Teaching – theoretical lectures	76 hours

		16.2	Practice (laboratories, clinical), seminars, team work	109 hours		
17.	Other forms of activities	17.1	Project assignments			
		17.2	Individual assignments			
		17.3	Studying at home	205 hours		
18.	Requirements for signature and taking the final exam	For the student to obtain a signature, he/she must gain the minimum required points from attendance of the theoretical and practical teaching.				
19.	Grading					
	19.1.	Tests: points				
	19.2.	Seminar paper/project, written and oral presentation: points	Theoretical teaching attendance and activity	min – max 1 - 5		
			Practical teaching attendance and activity	12 - 15		
	19.3.	Final exam: points	Theoretical part	9 - 15		
Practical part			20 - 35			
Oral part			18 - 30			
20.	Grading criteria (points/grade)	Up to 59 points	5 (five) (F)			
		From 60 to 68 points	6 (six) (E)			
		From 69 to 76 points	7 (seven) (D)			
		From 77 to 84 points	8 (eight) (C)			
		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process	Student anonymous evaluation for the subject, teachers and associates participating in the teaching.				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	McPhee SJ, Ganong WF.	Pathophysiology of Disease: An Introduction to Clinical Medicine	Chicago: Mc Graw Hill Interamericana	2014
		2.	Swartz MH.	Textbook of Physical Diagnosis: History and Examination	Chicago: Mc Graw Hill Interamericana	2014
		3.	Bickley LS, Szilagyi PG.	Bates’ Guide to Physical Examination and History Taking	Akadmenski pečat, 10 <sup>th</sup> edition, Skopje	2012
		4.	Wallach J.	Interpretation of Diagnostic Tests	Akademski pečat, 8 <sup>th</sup> edition, Skopje	2013
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Georgievska Ismail Lj, Poposka L, Trajkov I, Gjorgov N.	Electrocardiography	(COIBSS. MK – ID71834122)	2008

		2.	Grozdanovski R, Ivanovski N.	Chronic Renal Disease – Prevention, Clinical Manifestation and Treatment.	(COIBSS. MK – ID73515018)	2008
		3.	Sethuraman KR.	Communication Skills in Clinical Practice (Doctor-Patient Communication)	Skopje:Tabernakul	2010
		4.	Serafimovski V, Editor in chief	Internal Propedeutics	Kumanovo: Makedonska Riznica	2004

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Number 150

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	NUCLEAR MEDICINE			
2.	Code	MED 315			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Pathophysiology and Nuclear Medicine			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Third (III)	Semester	Fifth (V)
7.	ECTS credits	1.5			
8.	Professor (when more professors, responsible professor is assigned)	Assistant Prof. Nevena Manevska, MD, PhD - responsible professor *Lectures held by all professors from the Department of Pathophysiology and Nuclear Medicine			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: obtained credits and passed final exam of Biophysics. In order to take the exam the student should obtain minimum points in both theoretical and practical courses.			
11.	Subject program goals (competences) and study results:	To become acquainted with the basics of nuclear medicine, production of radioisotopes and radiopharmaceuticals. To get acquainted with radionuclide applications in diagnosis and therapy of diseases.			
12.	Subject content in details by	<b>Theoretical course:</b> <ul style="list-style-type: none"><li>Physical bases of radioactivity, types of decay, radioactivity detectors.</li></ul>			

	<b>chapters and units, with study results for every chapter</b>	<ul style="list-style-type: none"><li>• Radiopharmaceuticals preparation and application.</li><li>• Principles of radiotracers methods, application of radionuclides in diagnostic procedures and therapy of the diseases.</li></ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"><li>• Routine procedures in detection and measurement of radioactivity.</li><li>• Application of radionuclides for in vivo and in vitro procedures.</li><li>• Presentation of the most frequently performed nuclear medicine diagnostic procedures.</li></ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program. Signature from this subject provides attendance to VII semester.		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching during lectures and practical trainings, independent study by using textbooks, visual studying, practical exercises, computer-assisted learning.		
15.	<b>Total available time frame</b>	45 classes		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	20 classes
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10 classes
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 classes
18	<b>Requirements for signature</b>	The student is required to actively follow all of the planned activities. <b>Conditional criteria for assessment of knowledge:</b> In order to get a signature, the student should obtain minimum points in both theoretical and practical courses.		
19.	<b>Methods of assessment</b>			
	19.1.	Tests: points		
	19.2.	Seminar paper/project, written and oral presentation: points		
	19.3.	Final exam: points	min-max Written exam 36 - 60 Oral exam 15 - 25	
		Active participation: points	Theoretical course points (% of presence) 1 - 5 min. 30% 1 31-70% 2 71-100% 5 Practical course 8 - 10	

20.	<b>Grading criteria (points/grade)</b>	Up to 59 points	5 (five) (F)			
		From 60 to 68 points	6 (six) (E)			
		From 69 to 76 points	7 (seven) (D)			
		From 77 to 84 points	8 (eight) (C)			
		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21.	<b>Methods of monitoring the quality of the teaching process</b>	Anonymous evaluation by the students for the teaching staff.				
22.	<b>Literature</b>					
	22.1.	<b>Mandatory literature</b>				
		Number	Author	Title	Publisher	Year
		1.	O'Malley JP, Ziessman HA, Thrall JH.	Nuclear Medicine and Molecular Imaging: The Requisites	New York: Elsevier	2020
	22.2.	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Mettler FA, Guiberteau MJ.	Essentials of Nuclear Medicine and Molecular Imaging: Expert Consult	New York: Elsevier	2018

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>RADIOLOGY</b>			
2.	<b>Code</b>	MED 316			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Medical Faculty, Department of Radiology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Third (III)	Semester	Fifth (V)
7.	<b>ECTS credits</b>	3			
8.	<b>Professor (when more professors,</b>	Assistant Prof. Petar Janevski MD, PhD- responsible professor *Lectures held by the professors from the Department of Radiology			



	<b>responsible professor is assigned)</b>	
9.	<b>Language of the study</b>	English
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	<p>Precondition for attending the classes is passed Biophysics.  In order to take the final exam, the student should pass all anticipated continual assessments or to obtain minimum 30% of the total number of points in the continual assessments; in the examination session the student has to pass previously failed parts of continual assessments and then he/she can approach to take the final exam.</p> <p>Active participation (points) min – max  Theoretical course 2-3  Practical course 2–3</p>
11.	<b>Subject program goals (competences) and study results:</b>	<p>Learning fundamental concepts in radiology by systems in the human body  Practical work by showing examples of radiological methods, normal anatomy and pathology by systems</p>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Brief content</b>  <b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Imaging physics and radiation protection</li> <li>• The characteristics of imaging techniques</li> <li>• The clinical role of imaging techniques, both individually and as part of a coordinated investigation regime</li> <li>• The use of appropriate referral criteria and clinical guidelines</li> <li>• Appropriate investigation of acute and life-threatening conditions</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>• Basic interpretative skills for conventional and cross section imaging</li> <li>• Interpretative skills for emergency investigations</li> </ul>
13.	<b>Interconnection between subjects</b>	<p>Related to all subjects in the study program  Passed exam of Radiology is precondition for taking the classes of any subject from the seventh semester</p>
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching during lectures, practical courses and colloquium exams
15.	<b>Total available time frame</b>	90
16.	<b>Forms of teaching activities</b>	16.1. Lessons – theoretical lessons, hours 30
		16.2. Practical lessons (laboratory, auditory), seminars, team work: hours 30
		16.3. Practice: hours
17.	<b>Other forms of activities</b>	17.1. Project tasks: hours
		17.2. Individual tasks: hours
		17.3. Studying at home: hours 30
18.	<b>Requirements for signature</b>	In order to get a signature, the student should attend minimum 30% of theoretical and practical courses and to obtain minimum points.

19.	Methods of assessment					
	19.1.	Tests: points		First continual assessment 12 min.- 20 max. Second continual assessment 12 min.- 20 max. Practical and oral examination 32 min.- 54 max.		
	19.2.	Seminar paper/project, written and oral presentation:		/		
	19.3.	Final exam: points				
20.	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation for the subject, teachers and associates participating in the teaching			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Eastman G, Wald C, Crossin J	Getting Started in Clinical Radiology: From Image to Diagnosis, 1st edition	New York: Thieme	2005
		2.	Möller TB, Emil Reif E	Pocket Atlas of Sectional Anatomy, Vol. 1: Head and Neck, Computed Tomography and Magnetic Resonance Imaging, 4th edition	New York: Thieme	2013
		3.	Möller TB, Emil Reif E	Pocket Atlas of Sectional Anatomy, Vol. II: Thorax, Heart, Abdomen and Pelvis: Computed Tomography and Magnetic Resonance Imaging 4th edition	New York: Thieme	2013

		4.	Möller TB, Emil Reif E	Pocket Atlas of Sectional Anatomy, Volume III: Spine, Extremities, Joints: Computed Tomography and Magnetic Resonance Imaging 2nd Edition	New York: Thieme	2017
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Herring W.	Learning Radiology: Recognizing the Basics, 5th edition	New York: Elsevier	2023

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Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	PATHOLOGY 2			
2.	Code	MED 321			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Pathology			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Third (III)	Semester	Sixth (VI)
7.	ECTS credits	8			
8.	Professor (when more professors, responsible professor is assigned)	Assoc. Prof. Magdalena Bogdanovska Todorovska, PhD, MD - responsible professor *Lectures held by all professors from the Department of Pathology			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: passed exams Biochemistry 1 and Physiology 2. Signatures from: Pathology 1 and Pathophysiology 2. In order to take the final exam, the student has to have at least a minimum points from the periodical evaluation (24 points), or get at least 30% of the total number of points provided for continuous check of knowledge (13 points); during the exam session the student must take an examination for the failed periodical evaluation first, and afterwards the student may proceed to the final exam.			
11.	Subject program goals (competences) and study results:	To enable learning of the ethiopathogenetic mechanisms of the diseases. To enable learning of the morphologic basis, macroscopic and histopathologic changes in tissues and organs in diseases of all systems.			

		To train the students for morphologic diagnostics of the diseases, as well as to introduce the contemporary diagnostic techniques. To introduce the basic clinical manifestations of the diseases		
12.	Subject content in details by chapters and units, with study results for every chapter	<b>Theoretical course:</b> Pathology by systems: <ul style="list-style-type: none"><li>• Pathology of the digestive system</li><li>• Pathology of the liver, gallbladder and pancreas</li><li>• Pathology of the urinary system</li><li>• Pathology of breast</li><li>• Pathology of the endocrine system</li><li>• Pathology of the central nervous system</li><li>• Pathology of the genital system</li><li>• Pathology of skin</li><li>• Pathology of the locomotion system</li></ul> <b>Practical course:</b> <ul style="list-style-type: none"><li>• Learning the skills of microscopic analysis and diagnostics on histopathologic slides, dissection and macroscopic analyses of surgical specimens.</li><li>• Learning the manual skills of autopsy including determination of the main disease, complications of the main disease, prior diseases and determining the cause of death.</li></ul>		
13.	Interconnection between subjects	Related to all subjects in the study program. Passed subject provides attendance to VII semester.		
14.	Description of the subject's study and working methods in details	Interactive lectures, practical exercises /seminars		
15.	Total available time frame	240		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	60
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	60
		16.3.	Practice: hours	Facultative
17.	Other forms of activities	17.1.	Project tasks: hours	Facultative
		17.2.	Individual tasks: hours	Facultative
		17.3.	Studying at home: hours	120 classes
18.	Requirements for signature	Active participation (points) min – max Theoretical course 1-4 Practical course 2-4		
19.	Methods of assessment			
	19.1.	Tests: points	Continual assessment * points 26-40  One written test covering the following areas of Pathology 2: <ul style="list-style-type: none"><li>• Pathology of the digestive system,</li><li>• Pathology of the biliary system and pancreas.</li><li>• Pathology of the urinary system.</li><li>• Pathology of the breast</li><li>• Pathology of the endocrine system</li></ul>	

			• Pathology of the central nervous system			
	19.2.	Seminar paper/project, written and oral presentation: points	1-2 points			
	19.3.	Final exam: points	<p>Min-max</p> <p>Oral exam* points 15-25</p> <p>Practical exam** pts 15-25</p> <p>*Oral exam (integrative) – 4 questions taken from the whole Pathology 2 subject program</p> <p>** Practical exam (catalogue skills) microscopical analysis and diagnosis of 4 histological slides, autopsy or dissection and macroscopical analysis of surgical specimens with theoretical discussion about the topic considered.</p> <p>The final grade is formed according to the grading table, based on the sum of the points earned from all activities, continuous checks of knowledge and the final exam.</p>			
19.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
From 60 to 68 points			6 (six) (E)			
From 69 to 76 points			7 (seven) (D)			
From 77 to 84 points			8 (eight) (C)			
From 85 to 92 points			9 (nine) (B)			
From 93 to 100 points			10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process		Student’s anonymous evaluation of the subject, teachers and associates involved in the educational process.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1	Kumar V, Cotran RS, Robbins SL.	Robbins Basic Pathology, 7th ed.	Philadelphia: W.B. Saunders Company	2003
		2.	Kumar V, Abbas AK, Aster JC, Fausto N.	Pathologic Basis of Disease, 8 <sup>th</sup> ed.	Philadelphia: W.B. Saunders Company	2010
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year

		1.	Klatt EC	Robbins and Cotran Atlas of Pathology	Philadelphia: W.A. Saunders	2010
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Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	EPIDEMIOLOGY			
2.	Code	MED 322			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Epidemiology and Biostatistics with Medical Informatics			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Third (III)	Semester	Sixth (VI)
7	ECTS credits	5			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Vesna Velic Stefanovska MD PhD - responsible professor *Lectures held by the professors from the Department of Epidemiology and Biostatistics with Medical Informatics			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes is passed exam Biostatistics with Medical Informatics. To take the final exam, the student must pass the continuous tests or acquire a minimum of 30% of total number of points in the continuous tests, whereas during the exams session the student shall take the previously failed continuous tests, and then shall take the final exam. Active participation (points) min – max Theoretical course 1-3 Practical course 5–10			
11.	Subject program goals (competences) and study results:	<ul style="list-style-type: none"><li>Acquiring of theoretical and practical knowledge from the area of epidemiology which would enable recognition and resolution of epidemiological problems and challenges as well as their prevention.</li><li>Acquiring of skills which will use mortality and morbidity indicators to analyze conditions with specific diseases or groups of diseases, including the ethyology factors for their occurrence.</li><li>Recognition of the role and meaning of the levels of prevention and their application in practice.</li><li>Acquiring knowledge of the epidemiological methods and their implementation in the scientific research.</li><li>Acquiring of knowledge of epidemiology of infectious and noninfectious diseases and conditions.</li></ul>			
12.	Subject content in details by chapters and units, with study	Content of the study program: Theoretical course:			

	<b>results for every chapter</b>	<ul style="list-style-type: none"> <li>• Basis of epidemiology – introduction, goals, history, contemporary epidemiology;</li> <li>• Epidemiology methods</li> <li>• Indicators of diseases, deterioration of health, and death rate;</li> <li>• Epidemiological process and epidemiological models</li> <li>• Occurrence of infection, and infectious diseases</li> <li>• Measures of prevention and eradication of diseases</li> <li>• Epidemiological oversight</li> <li>• Immunization, seroprophylaxis, and immunoprophylaxis</li> <li>• Elimination and eradication of infectious diseases</li> <li>• Desinfection, desinsection and deratisation</li> <li>• Health education</li> <li>• Intrahospital infections</li> <li>• Epidemiological doctrine of military conflict and state of emergency</li> <li>• Epidemiological characteristics of intestinal, respiratory, contact, and transmissible infectious diseases</li> <li>• Epidemiological characteristics of zoonosis and helminthosis</li> <li>• Epidemiological characteristics of noncommunicable diseases and health deterioration.</li> </ul> <p><b>Practical Course:</b></p> <ul style="list-style-type: none"> <li>• Application of epidemiological methods in practice</li> <li>• Processing of samples from various types of epidemics – resolving of an invented case of epidemics</li> <li>• Acquainting with books of rules, and laws from the area of epidemiology</li> <li>• Mastering the acquired theoretical knowledge</li> </ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program. Signature from this subject provides attendance to VII semester. Passed exam is obligated for Public Health-Clinical Practice		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching, practical course, seminars		
15.	<b>Total available time frame</b>	150 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	40
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	35
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	75
18.	<b>Requirements for signature</b>	To obtain a signature, the student needs to acquire minimum points from attendance at seminars, theoretical and practical courses.		

		The assessment of the subject is established according to the table of marks, based on the sum of points from all activities, continuous tests and final exam.				
19.	Methods of assessment					
	19.1.	Tests: points		Continuous tests of knowledge (mid-term) consists of 2 written tests Points min/ max 18 - 30		
	19.2.	Seminar paper/project, written and oral presentation: points		Seminar work points min/ max 0 - 5		
	19.3.	Final exam: points		Oral part points min/ max 36 - 52		
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Anonymous evaluation by students on the subject, teaching staff, and associates participating in the teaching.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Buring JE, Hennekens C	Epidemiology in medicine	Boston: Little, Brown and Company	1987
		2.	Banatvala N, Bovet P	Noncommunicable Diseases A Compendium	London: Routledge	2023
		3.	Abubakar I, Cohen T, Rodrigues LC	Infectious Disease Epidemiology	Oxford University Press	2016
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Gordis L.	Epidemiology. 6th edition.	Philadelphia: Saunders	2018
		2.	Beaglehole R, Bonita R, Kjellstrom T.	Basic Epidemiology, 2nd edition	Geneva: World Health Organization	2007

Number:34

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
1.	<b>Subject</b>	<b>PHARMACOLOGY</b>



2.	<b>Code</b>	MED 323			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Medical Faculty, Department of Preclinical and Clinical Pharmacology with Toxicology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Third (III)	Semester	Sixth (VI)
7	<b>ECTS credits</b>	7			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Dimche Zafirov PhD, MD - responsible professor *Lectures held by all professors from the Department of Preclinical and Clinical Pharmacology with Toxicology			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	<p>Preconditions for attending the classes: Passed exams: Biochemistry 1 and Physiology 2 Signature: Pathology 1 and Pathophysiology 2</p> <p>In order to take the final exam, the student should obtain the minimum points in the three continual assessments;</p> <p>If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam. The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.</p>			
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• Introduction to pharmacology as a subject and its aims;</li> <li>• Introduction to pharmacodynamic characteristics of drugs, how a drug affects an organism, modes of action of drugs upon the body.</li> <li>• Achieving basic knowledge of pharmacokinetic, the branch of pharmacology concerned with the movement of drugs within the body and the importance of knowing the pharmacokinetic properties of drugs.</li> <li>• Acquiring basic knowledge about toxicology and toxicological research as well as their importance in the development of drugs</li> <li>• Treatment of addiction and drug abuse</li> <li>• Understanding the basic principles of pharmacogenetics</li> <li>• Acquiring knowledge of special pharmacology, in meaning of pharmacodynamic groups and their therapeutic areas.</li> <li>• Students will learn how to prescribe medicines and will gain understanding of all pharmaceutical dosage forms.</li> </ul>			
12.	<b>Subject content in details by chapters and units, with</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• General Principles <ul style="list-style-type: none"> <li>– How drugs act: general principles, molecular aspects, cellular aspects, cell proliferation, apoptosis, repair and regeneration</li> </ul> </li> </ul>			

	<b>study results for every chapter</b>	<ul style="list-style-type: none"> <li>– Pharmacokinetics of drugs (absorption, distribution, metabolism and elimination of drugs)</li> <li>– Individual variation, pharmacogenomics and personalised medicine</li> <li>• Chemical mediators and the autonomic nervous system</li> <li>• Drug addiction</li> <li>• Pharmacology of: <ul style="list-style-type: none"> <li>– central nervous system,</li> <li>– psychopharmacology,</li> <li>– respiratory system,</li> <li>– cardiovascular system,</li> <li>– hematology,</li> <li>– digestive system,</li> <li>– urinary system,</li> <li>– hormones, vitamins,</li> <li>– antimicrobial drugs.</li> </ul> </li> <li>• Preclinical and Clinical Toxicology (separation of toxins, general principles of poisoning, treatment and specific treatment of poisoning).</li> </ul> <p><b>Practical classes:</b></p> <ul style="list-style-type: none"> <li>• Pharmacography</li> <li>• Pharmaceutical dosage forms</li> <li>• Demonstrating experimental models: in vitro and in vivo.</li> </ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program. Signature of Pharmacology is precondition for taking the classes of any subject from the seventh semester.		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching during lectures, practical trainings and seminars.		
15.	<b>Total available time frame</b>	210 classes		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	55
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	50
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	105
18.	<b>Requirements for signature</b>	In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper;  Active participation (points)  Theoretical course <div style="text-align: right;">min – max 1.8 – 3</div>		

		Practical course		4.2 – 7		
19.	Methods of assessment					
19.1.	Tests: points	<div>min – max</div> <b>Continual assessment - points</b> <div>24 – 40</div> Continual assessment of knowledge: Two written tests – Basic pharmacology (min 12, max 20 points) – Special pharmacology (min 12 max 20 points)  The student is obligated to achieve a minimum of the intended points for each part of the assessment to pass the continual assesment. Otherwise the final exam is considered failed.				
19.2.	Seminar paper/project, written and oral presentation: points					
19.3.	Final exam: points	<div>min – max</div> <b>Oral examination*</b> points <div>24 – 40</div> <b>Practical examination**</b> points <div>6 – 10</div> <b>*Oral examination (integrative)</b> – 4 questions on the basis of which the integrative knowledge in the field of pharmacology is assessed, which is important for understanding the subject.  <b>**Practical examination (catalog skills)</b> – pharmacography and pharmaceutical dosage form. The student is obligated to achieve a minimum of the intended points for each part of the assessment to pass the continual assesment. Otherwise the final exam is considered failed.				
20	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation for the subject, teachers and associates participating in the teaching.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Rang and Dale’s: Rang HS, Dale MM, Ritter JM, Flower R	Pharmacology, Ninth edition	New York: Elsevier	2020

		2.	Department of pharmacology and toxicology	Authorized lectures		2023
		3.	Katzung BG, Kruidering-Hall M, Trevor AJ.	Pharmacology, Examination & Board Review, 12th Edition	Chicago: Mc Graw-Hill Education, LANGE	2019
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Brunton LL, Lazo JS, Parker KL	Goodman & Gilman's The Pharmacological Basis of Therapeutics	Chicago: Mc Graw-Hill Education	2018

Number:35

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	TRANSFUSIOLOGY			
2.	Code	MED 324			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Transfusiology			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Third (III)	Semester	Sixth (VI)
7.	ECTS credits	2			

8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Tatjana Makarovska Bojadjeva - responsible professor *Lectures held by the professors from the Department of Transfusiology
9.	<b>Language of the study</b>	English
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: Passed exams: Biochemistry 1, Physiology 2 Signature: Pathology 1, Pathophysiology 2 In order to take the final exam, the student should obtain the minimum points in the continual assessment.
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• To understand fundamentals of laboratory and clinical transfusion medicine</li> <li>• To promote voluntary non-remunerated blood donation</li> <li>• To make distinction between different types of blood products, their indications, dosing and adverse effects</li> <li>• To be able to perform and interpret blood grouping results</li> <li>• To solve serologic discrepancies</li> <li>• To solve compatibility problems in pre-transfusion testing</li> <li>• To possess knowledge in prenatal and postnatal immunohematology diagnostic and to be able to give adequate advice concerning all the aspects of RhD prophylaxis</li> <li>• To be aware of the need and the tools for quality assessment of blood products, as well as of transfusion medicine laboratory testing</li> <li>• To be able to interpret coagulation testing results in terms of diagnosis or adequate substitution of blood products or appropriate dosage of antithrombotic drugs</li> </ul>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>1. Blood donation</b></p> <ul style="list-style-type: none"> <li>• Recruitment of voluntary non-remunerated donor</li> <li>• Donor eligibility and criteria for donor acceptability</li> <li>• Types of blood donation-donation of homologous and autologous blood, donor apheresis</li> </ul> <p><b>2. Blood collection</b></p> <ul style="list-style-type: none"> <li>• Overview of anticoagulants and additive solutions</li> <li>• Blood collection bags-overview</li> <li>• Blood collection area</li> <li>• Donor identification</li> <li>• Venepuncture</li> <li>• Taking the donation of whole blood</li> <li>• Apheresis blood donation</li> <li>• Donor care</li> <li>• Adverse reactions to blood donation</li> <li>• Donor records</li> <li>• Handling of collected units of blood</li> </ul> <p><b>3. Blood processing</b></p> <ul style="list-style-type: none"> <li>• Concept of blood components</li> <li>• Types of blood components-overview</li> </ul>

		<ul style="list-style-type: none"> <li>• Blood processing equipment and principles of centrifugation</li> <li>• Preparation of blood components (red cell concentrate, plasma, platelet concentrate) and their modification (leucoreduction and irradiation)</li> <li>• Labeling of blood components</li> <li>• Storage conditions and transportation</li> <li>• Quality control</li> <li>• Overview of plasma fractionation</li> </ul> <p><b>4. Immunohematology</b></p> <ul style="list-style-type: none"> <li>• Blood group systems (blood group terminology)</li> <li>• ABO and H blood group systems (Inheritance, antigen frequencies, production of ABO antigens, H-deficient phenotypes, subgroups within the ABO system, ABO system antibodies, ABO grouping, clinical significance of ABO system)</li> <li>• Rh blood group system (Rh genetics and inheritance, Rh antigens, Rh typing, clinical significance of Rh system)</li> <li>• Other major blood group systems (I, P, MNS, Kell, Duffy, Kidd, Lewis, Lutheran)</li> <li>• Additional blood group systems</li> </ul> <p><b>5. Principles of immunohematology laboratory techniques</b></p> <ul style="list-style-type: none"> <li>• Antigen-antibody reactions (haemagglutination, sensitization, haemolysis, neutralization, precipitation)</li> <li>• Factors that influence antigen-antibody reaction (proteolytic enzymes, high molecular mass substances, low ionic strength solution)</li> <li>• Role of complement</li> <li>• Role of antihuman globulin</li> <li>• Polyclonal and monoclonal antibodies</li> <li>• General immunohaematologic techniques (saline, indirect and direct antiglobulin test, enzyme)</li> <li>• Microcolumn techniques</li> <li>• Molecular technology (genomic amplification techniques, polymerase chain reaction)</li> <li>• ABO/Rh and other red cell antigen typing</li> <li>• red cell antibody screening and identification</li> <li>• Antibody titration and quantification</li> <li>• Antibody neutralization</li> <li>• Antibody adsorption/elution</li> <li>• Automation</li> <li>• Causes of false or discrepant results in serologic tests</li> </ul> <p><b>6. Compatibility testing</b></p> <ul style="list-style-type: none"> <li>• Concepts of crossmatching</li> <li>• Patient and sample identification</li> <li>• Selection of compatible blood units</li> <li>• Laboratory investigation of incompatible blood transfusion</li> <li>• Issue of blood</li> </ul>
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		<p><b>7. Blood donation testing and blood safety</b></p> <ul style="list-style-type: none"> <li>• Red cell serology testing</li> <li>• Transfusion transmissible infections (human immunodeficiency virus, hepatitis B, C and E virus, other transmissible infections)</li> <li>• Testing strategies (serological testing, nucleic acid amplification testing, window periods, testing algorithms)</li> </ul> <p><b>8. Haemolytic disease of the fetus and newborn (HDFN)</b></p> <ul style="list-style-type: none"> <li>• Causes, diagnosis and treatment of HDFN</li> <li>• Prevention of HDFN caused by anti-D</li> <li>• Antenatal testing and interventions to improve prognosis</li> <li>• Postnatal testing and interventions to treat anemia and hyperbilirubinaemia</li> <li>• Hemolytic anemias-laboratory diagnosis</li> <li>• Transfusion in autoimmune haemolytic anaemia (warm, cold, drug induced haemolytic anaemia)</li> </ul> <p><b>9. Clinical transfusiology</b></p> <ul style="list-style-type: none"> <li>• Clinical benefits of blood transfusion</li> <li>• Transfusion of patients with special needs (neonatal patients, patients on chemotherapy, patients for transplantation, patient with chronic or severe anemia, patients with rare blood groups)</li> <li>• Massive transfusion</li> <li>• Transfusion risks and adverse reactions (haemolytic, allergic, febrile reactions, sepsis, transfusion associated acute lung injury, circulatory overload, citrate, potassium and iron toxicity, transfusion associated graft versus host reaction, transmission of infectious disease, alloimmunization)</li> <li>• Hemovigilance of donors and recipients (monitoring, evaluation and reporting)</li> <li>• Hospital transfusion committees</li> <li>• Alternatives to blood transfusion</li> </ul> <p><b>10. Laboratory diagnosis and treatment of thrombotic and hemorrhagic disorders</b></p> <ul style="list-style-type: none"> <li>• Coagulation and fibrinolytic system</li> <li>• Overview of screening hemostasis tests (preanalytical variables, methods, interpretation of the results)</li> <li>• Tests for the fibrinolytic system</li> <li>• Platelet function tests</li> <li>• Viscoelastic methods for screening hemostasis</li> <li>• Laboratory diagnosis of thrombotic and hemorrhagic disorders (thrombophilia and hemophilia testing)</li> <li>• Laboratory monitoring of anticoagulant and antiplatelet drugs</li> </ul>
13.	<b>Interconnection between subjects</b>	<p>Related to all subjects in the study program.</p> <p>Signature from this subject provides attendance to VII semester</p>

14.	Description of the subject's study and working methods in details	Theoretical and practical lessons, individual tasks (problem solving practice), seminars.				
15.	Total available time frame	60 hours				
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	18		
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	12		
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours	8		
		17.2.	Individual tasks: hours	7		
		17.3.	Studying at home: hours	15		
18.	Requirements for signature	Presence and active participation of the students in theoretical and practical teaching. Oral presentation of the seminar project.				
19.	Methods of assessment					
	19.1.	Tests: points		Continual assessment 22-34		
	19.2.	Seminar paper/project, written and oral presentation: points		9-30		
	19.3.	Final exam: points		Final exam 23-36		
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Interactive participation of students in theoretical and practical teaching (case reports, problem solving-exams)			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	European Committee on Blood Transfusion	Guide to the preparation, use and quality Assurance of Blood Components	Council of Europe	2019
		2.	Bromilow I, Daniels G	Essential guide to blood groups	New Jersey: Wiley Blackwell	2015
		3.	Maitta RW	Clinical principles of transfusion medicine	New York: Elsevier	2018
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Barbeau JM	Risk management in transfusion medicine	New York: Elsevier	2019



Number:36

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	Subject	<b>INTERNAL MEDICINE</b>			
2.	Code	MED 411			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Internal Medicine			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Fourth (IV)	Semester	Seventh (VII), Eighth (VIII)
7.	ECTS credits	20.5			
8.	Professor (when more professors, responsible professor is assigned)	Assistant Professor Beti Todorovska, MD, PhD - responsible professor *Lectures held by the professors from the Department of Internal Medicine			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: requirement met for the VII <sup>th</sup> semester. In order to take the final exam, the student should obtain the minimum points from all continual assessments			
11.	Subject program goals (competence):	<ul style="list-style-type: none"> <li>The student is required to learn and master the skills in the framework of rational diagnostics and modern treatment, incorporated in the disease etiopathogenesis and clinical pharmacology postulates.</li> <li>The student shall be able to perform rational clinical assessments and to treat diseases of the heart and blood vessels, lungs, endocrine lymph glands, renal, hematologic and toxicological diseases and disorders.</li> <li>The student must learn to base the modern clinical assessment on a rational diagnosis, especially in the segment of clinical examination, and later to rationally apply targeted paraclinical examinations.</li> <li>The student must learn how to center modern rational treatment on the momentarily best evidence and therapeutic findings, based on evidence based medicine.</li> </ul>			
12.	Subject content	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>Diseases and disorders of the cardiovascular system</li> <li>Diseases and disorders of the respiratory system</li> <li>Diseases and disorders of the gastrointestinal system</li> <li>Diseases and disorders of the urinary system</li> <li>Diseases and disorders of the joints and connective tissue</li> <li>Diseases and disorders of the endocrine glands and</li> </ul>			

		metabolism <ul style="list-style-type: none"> <li>• Diseases and disorders of the hematological system</li> <li>• Toxicologic conditions and disorders</li> </ul> <b>Practical course:</b> <ul style="list-style-type: none"> <li>• Mastering of clinical skills and practical application of the acquired theoretical knowledge.</li> </ul>
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program Passed subject provides attendance to Internal Medicine Clinical Practice and Internal Medicine Seminars, Geriatric Medicine and Palliative Medicine.
14.	<b>Description of the subject's study and working methods in details</b>	Interactive lectures, seminars and practical application of the acquired theoretical knowledge.
15.	<b>Total available time frame</b>	615 hours
16.	<b>Forms of teaching activities</b>	16.1 Lectures – theoretical teaching 160 hours
		16.2 Practice, Seminars 195 hours
17.	<b>Other forms of activities</b>	17.1 Practice
		17.2 Individual assignments
		17.3 Studying at home 260 hours
18.	<b>Requirements for signature</b>	Attendance at theoretical lectures and practical teaching, as well as passed tests.
19.	<b>Method of assesment</b> <span style="float: right;"><b>points</b></span>	
	19.1. Continuous assessments	min. – max. Continuous assessments points 8,8 – 16  Continuous assessments cover all areas of internal medicine in various combinations, depending on the group in which the students attend, as well as the current schedule.  From each area, the students can obtain 1,1 – 2,0 points (a total of eight areas – four tests)
	19.2. Seminar paper/project/presentation:	min. – max.
	19.3. Final exam: points	min. – max. Practical part* points 14 – 26 Oral part** points 24,2 – 38  Practical part* (in accordance the skills catalogue) – patient exam, differential diagnosis, treatment  Oral part (integrative)** - questions on which integrative knowledge is assessed, which is integral for comprehension of the complete subject and medical practice.
	19.4. Active participation	min. – max. Theoretical teaching* points 1 – 5 Practical teaching** points 12-15

			* Attendance at lectures: 51-60% - 1 point; 61%-70% - 2 points; 71% - 80% - 3 points; 81% - 90% - 4 points; 91%-100% - points ** Practical teaching 50 practice exercises attendance: 0,1 point, active participation 0,2 points			
20.	Grading criteria (points/grade)	Up to 59 points		5 (five) (F)		
		From 60 to 68 points		6 (six) (E)		
		From 69 to 76 points		7 (seven) (D)		
		From 77 to 84 points		8 (eight) (C)		
		From 85 to 92 points		9 (nine) (B)		
		From 93 to 100 points		10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation for the subject, teachers and associates participating in the teaching.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Loscalzo J. et al.	Harrison`s Principles of Internal Medicine 21th edition	Chicago: McGraw Hill	2022
		2.	Goldman L, Ausiello D.	Goldman-Cecil Medicine, 27 <sup>th</sup> edition	New York:Elsivier	2023
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Georgievska Ismail Lj, Poposka L, Trajkov I, Gjorgov N.	Electrocardiography	(COIBSS. mk – ID71834122):	2008
		2.	Grozdanovski R, Ivanovski N.	Chronic Renal Disease – Prevention, Clinical Manifestation and Treatment Skopje	(COIBSS. MK – ID73515018)	2008

Number:37

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
1.	<b>Subject</b>	<b>INFECTOLOGY</b>
2.	<b>Code</b>	MED 412
3.	<b>Study program</b>	General Medicine
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Medical Faculty, Department of Infectology

5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Fourth (IV)	Semester	Seventh (VII)
7.	ECTS credits	7			
8.	Professor (when more professors, responsible professor is assigned)	Associate Prof. Marija Cvetanovska, PhD, MD - responsible professor *Lectures held by all professors from the Department of Infectology			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: criteria meet for enrollment of the seventh semester. In order to take the final exam the student has to pass the continuous assessment.			
11.	Subject program goals (competences) and study results:	<ul style="list-style-type: none"> <li>The students will be able to learn and use the learned knowledge for rational diagnosis, contemporary treatment and prevention of infectious diseases.</li> <li>The students will learn to make a rational clinical judgment for recognizing infectious diseases in different, mostly expected situations and prescribe a proper treatment.</li> </ul>			
12.	Subject content in details by chapters and units, with study results for every chapter	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>General Infectology: definition of the term infection and anti-infective immunity, introduction to the pathogenesis of infectious diseases, principles of diagnosis and treatment, anti-infective therapy (antibiotic therapy, antiviral therapy, anti-parasitic therapy, antifungal medications, principles of immune prophylaxis)</li> <li>Special Infectology: introduction of basic syndromes with infectious etiology, introduction of the specific bacterial, viral, parasitic, and fungal infections and prion infections, basic knowledge of infections in special hosts, introduction to the importance of recognizing, treatment and prevention of nosocomial infections</li> </ul> <p><b>Practical course:</b> Mastering the clinical skills and usage of the acquired theoretical knowledge</p>			
13.	Interconnection between subjects	Related to all subjects in the study program.			
14.	Description of the subject's study and working	Interactive teaching during lectures and practical trainings, seminars			

	methods in details			
15.	Total available time frame	210 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	45 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	60 hours
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	105 hours
18.	Requirements for signature	<b>Obligatory criteria:</b> In order to get a professor’s signature the students has to attend theoretic and practical studies, as well as seminars and to gain minimum points.  In order to take the final exam the student has to pass the continuous assessment (General infectology). During the exams the students has to pass the previously failed Continuous assessments (colloquium in general infectology ) and then continue to the final exam.  The grade/score for the entire exam is obtained according the table of grades and based on the sum of the points gained in all the activities, Continuous assessments and final exam.		
19.	<b>Methods of assessment</b>			
	19.1.	Tests: points	Continual assessment* min-max points 12 – 20 <b>Continual assessment</b> – 1 written test General Infectology (for mark 10=19-20 points; for mark 9=17-18 points; for mark 8=15-16 points; for mark 7=13-14 points; for mark 6=12 points	
	19.2.	Seminar paper/project, written and oral presentation: points		
		Active participation	min-max Theoretic lectures* points 1-2,5 Practical lectures** points 5-7,5  * presence in the theoretical course 51%-60% 1 point 61%-70% 1,5 points 71%-85% 2 points 86%- 100% 2,5 points	

	19.3.	Final exam: points	<b>Final exam: final test + practical examination +oral examination</b> points min-max 1. Final test * 9 - 15 2. Practical examination** 9 - 15 3. Oral examination*** 24 – 40  * <b>Final test</b> – to assess students’ knowledge in infectology- special Infectology (for mark 10=14,5-15 points; for mark 9=13-14 points; for mark 8=11,5-12,5 points; for mark 7=10-11 points; for mark 6=9-9,5 points) ** <b>Practical examination</b> (according to a catalogue of skills): examination of the patients, diagnosis, differential diagnosis, therapy (for mark 10=14,5-15 points; for mark 9=13-14 points; for mark 8=11,5-12,5 points; for mark 7=10-11 points; for mark 6=9-9,5 points) *** <b>Oral examination (integrated)</b> - 4 questions in which the integrated knowledge of the student is checked on matters of understanding the subject of infectious diseases as a whole as well as the practical medical routine in infectious diseases (for mark 10=38-40 points; for mark 9=35-37 points); for mark 8=32-34 points); for mark 7=28-31 points; for mark 6=24-27 points)  Students are obliged to score the predicted minimum of the projected points for each section of the exam so that the points can be transferred for the final exam; otherwise they will fail the test.
20.	Grading criteria (points/grade)	Up to 59 points	5 (five) (F)
From 60 to 68 points		6 (six) (E)	
From 69 to 76 points		7 (seven) (D)	
From 77 to 84 points		8 (eight) (C)	
From 85 to 92 points		9 (nine) (B)	
From 93 to 100 points		10 (ten) (A)	

21.	Methods of monitoring the quality of the teaching process	Anonymous student evaluation about the subject of study as well as evaluation of the professors and assistant-professors enrolled in the subject studies.				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Cohen J, Powderly WG, Opal SM.	Infectious Diseases, 4 <sup>th</sup> edition	New York: Elsevier	2017
		2.	Bennett JE, Dolin R, Blaser MJ	Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases	New York: Elsevier	2019
	Additional literature					
	22.2.	Number	Author	Title	Publisher	Year
1.		Dimitriev Dimitar, Ivanovski Ljubomir, Milenkovi c Zvonko, Grunevsk a Violeta, Topuzovs ka Irena, Stojkovsk a Snezana.	Infectious Diseases	Ss Cyril and Methodius University in Skopje, Medical Faculty	2012	

Number:38

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
1.	<b>Subject</b>	<b>NEUROLOGY</b>
2.	<b>Code</b>	MED 413

3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Medical Faculty, Department of Neurology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Fourth (IV)	Semester	Seventh (VII)
7	<b>ECTS credits</b>	6			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Emilija Cvetkovska, PhD, MD - responsible professor *Lectures held by the professors from the Department of Neurology			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: fulfilled condition for VII semester. In order to take the final exam, the student should obtain the minimum points from the continual assessment.			
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• knowledge and skills for neurological symptoms</li> <li>• knowledge and skills for recognizing and interpreting neurological signs. <ul style="list-style-type: none"> <li>◦ knowledge and skills for topographic interpretation of neurological symptoms and signs</li> </ul> </li> <li>• Knowledge and skills for neurological diseases (epidemiology, pathophysiology, etiology, classification, diagnostic procedures, differential diagnosis, treatment options, prognosis)</li> <li>• Knowledge, skills, and competences in diagnosing neurological diseases and disorders.</li> <li>• Knowledge, skills, and competences in the use of different diagnostic procedures ( laboratory of blood and csf, neurophysiological methods, imaging methods, neuropsychological methods, genetic tests) for rational diagnosis of neurological diseases and disorders</li> <li>• Knowledge, skills and competences in management and treatment of neurological diseases and disorders</li> <li>• Knowledge , skills, and competences in communication with patients, families and care givers</li> <li>• Knowledge, skills, and competences in communication with the second and tertiary health care level when needed for additional diagnosis and treatment of neurological diseases</li> </ul>			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	Knowledge, skills, and competences to perform, interpret, diagnose, treatment and prognose in neurology: <ul style="list-style-type: none"> <li>• Clinical methods in neurology ( anamnesis and neurological examination)</li> <li>• Disorders of motility</li> <li>• Pain and disorders of somatic sensation</li> <li>• Disorders of special senses</li> </ul>			



		<ul style="list-style-type: none"><li>• Epilepsy and disorders of consciousness</li><li>• Derangements of Intellect, Behavior, and Language Caused by Diffuse and Focal Cerebral Disease</li><li>• Disorders of Energy, Mood, and Autonomic and Endocrine Functions</li><li>• Neurodevelopmental disorders and neurology of aging</li><li>• Disturbances of cerebrospinal fluid</li><li>• Neoplasms and paraneoplastic neurological diseases</li><li>• Infections of the nervous system</li><li>• Stroke and cerebrovascular diseases</li><li>• Craniocerebral trauma</li><li>• Multiple sclerosis and other inflammatory demyelinating diseases</li><li>• Inherited metabolic diseases of the nervous system</li><li>• Developmental diseases of the nervous system</li><li>• Degenerative diseases of the nervous system</li><li>• Acquired metabolic disease of the nervous system</li><li>• Diseases of the nervous system caused by nutritional deficiency</li><li>• Disorders of the nervous system caused by alcohol, drugs, toxins, and chemical agents</li><li>• Disease of the spinal cord</li><li>• Diseases of the peripheral nerves</li><li>• Diseases of the cranial nerves</li><li>• Diseases of the muscles</li><li>• Diseases of the neuromuscular junction</li></ul>		
13.	Interconnection between subjects	Related to all subjects in the study program.		
14.	Description of the subject’s study and working methods in details	Theoretical lessons, seminars, practice, project presentations, individual learning		
15.	Total available time frame	180		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	33
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	64
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	10
		17.3.	Studying at home: hours	73
18.	Requirements for signature	Participation in all of the planned activities		
19.	Methods of assessment			
	19.1.	Tests: points	15-25	
	19.2.	Seminar paper/project, written and oral presentation: points	10-15	

	19.3.	Final exam: points			35-60	
20.	Grading criteria (points/grade)			Up to 59 points	5 (five) (F)	
				From 60 to 68 points	6 (six) (E)	
				From 69 to 76 points	7 (seven) (D)	
				From 77 to 84 points	8 (eight) (C)	
				From 85 to 92 points	9 (nine) (B)	
				From 93 to 100 points	10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process			Student anonymous evaluation for the subject, teachers and associates participating in the teaching.		
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Ropper AH, Samuels MA, Klein J, Prasad S	Adams and Victor’s Principles in neurology	Chicago: Mc Graw-Hill Companies Inc.	2019
		2.	Roger S, Aminof M, Gringerb D	Clinical neurology	Chicago: Mc Graw-Hill Companies Inc.	2020
		3.	Daroff R, Jankovic J, Mazziotta J, Pomeroy S	Bradley’s Neurology in clinical practice	Oxford: Butterworth-Heinemann	2015
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	ED Louis, SA Mayer, Jm Noble	Merritt’s Neurology	Lippincott, Williams and Wilkins (LWW)	2021

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>	
1.	<b>Subject</b>	<b>DERMATOVENEROLOGY</b>	
2.	<b>Code</b>	MED 414	

3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Dermatology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Forth (IV)	Semester	Seventh (VII)
7.	<b>ECTS credits</b>	5			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Suzana Nikolovska, PhD, MD - responsible professor *Lectures held by all professors from the Department of Dermatology			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: fullfielel conditions of enrollement in VIIth semester In order to take the final exam, the student should obtain the minimum points in the continual assessment.			
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• The student will acquire knowledge about the basic concepts of structure, the function and morphological changes of the skin as well as diagnostic and therapeutic modalities in dermatovenereology</li> <li>• The student will acquire knowledge about the most common and urgent dermatology diseases, as well as sexually transmitted infections</li> <li>• The student will have the skills to recognize the most common and urgent conditions in dermatovenerology and create diagnostic and rational therapeutic protocol.</li> <li>• The student will be aware of the importance of taking proper dermatovenerological history, communication and collaboration with the patient and his family</li> <li>• The student will be aware of the importance of prevention and promotion in dermatovenereology</li> </ul>			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Structure and function of the skin, morphology of skin lesions</li> <li>• Treatment principals in dermatovenerology</li> <li>• Infections and infestations, STI</li> <li>• Emergency conditions in dermatology</li> <li>• Inflammatory skin disorders</li> <li>• Diseases of nail, hair and pigmentation</li> <li>• Reactive skin diseases</li> <li>• Skin signs of systemic diseases</li> <li>• Drug reactions</li> <li>• Neoplasms</li> </ul> <p><b>Practical course:</b> Practicing the clinical skills and practical application of the acquired theoretical knowledge on real patients.</p>			
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program.			

14.	Description of the subject’s study and working methods in details		Interactive teaching during lectures, seminars and practical trainings, independent study by using textbooks, computer-assisted learning			
15.	Total available time frame		150 classes			
16.	Forms of teaching activities		16.1.	Lessons – theoretical lessons, hours		25
			16.2.	Practical lessons Seminars		40 15
			16.3.	Practice: hours		
17.	Other forms of activities		17.1.	Project tasks: hours		
			17.2.	Individual tasks: hours		
			17.3.	Studying at home: hours		70
18.	Requirements for signature		80% presence during theoretical and practical lessons			
19.	Methods of assessment					
	19.1.	Tests: points			18-30	
	19.2.	Seminar paper/project, written and oral presentation: points			0-5	
	19.3.	Final exam: points			33-65	
20.	Grading criteria (points/grade)			Up to 59 points		5 (five) (F)
				From 60 to 68 points		6 (six) (E)
				From 69 to 76 points		7 (seven) (D)
				From 77 to 84 points		8 (eight) (C)
				From 85 to 92 points		9 (nine) (B)
				From 93 to 100 points		10 (ten) (A)
21.	Methods of monitoring the quality of the teaching process			Students’ anonymous evaluation of the course as well as teachers and assistants.		
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Wolf K, Johnson RA	Fitzpatrick’s Color Atlas and Synopsis of Clinical Dermatology	Chicago: Mc Graw Hill	2009
		2.	Burg S, Wallis D	Oxford Handbook of Medical Dermatology	Oxford University Press	2011
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year

		1.	Griffiths C, Barker J, Bleiker T, Chalmers R, Creamer D	Rook's Text Book of Dermatology	New Jersey: John Wiley and Sons Ltd	2016
		2.	Ancevski A, Gocev G, Pavlova Lj, Petrova N	Dermatovenerology	Skopje: Kultura	2005

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Attachment 3		Integrated cycle of studies – Subject program									
1.	Subject	SURGERY									
2.	Code	Med 421									
3.	Study program	General Medicine									
4.	Institution (unit, institute, chair, department)	Ss.Cyril and Methodius University in Skopje, Medical faculty, Department of surgery									
5.	Degree of education (first, second, third cycle)	Integrated 6 year studies									
6.	Academic year/semester	Year	Fourth (IV) and Fifth (V)	Semester	Eight (VIII) and ninth (IX)						
7	ECTS credits	9.5 credits in VIII semester, and 10.5 credits in (IX) semester									
8.	Professor (when more professors, responsible professor is assigned)	Associate Prof. Oliver Stankov, PhD, MD - responsible professor *Lectures held by the professors from the Department of Surgery									
9.	Language of the study	English									
10.	Preconditions for attending the classes and taking the subject's exam	Filled condition for VIII semester. Assessment of the complete exam is gained based on the sum of the scores obtained from all the activities (lectures, tutorials, seminars, colloquia, final exam)  <table><tr><td></td><td>min – max</td></tr><tr><td>Theoretical course</td><td>2- 8 points</td></tr><tr><td>Practical course</td><td>10 – 16 points</td></tr></table>					min – max	Theoretical course	2- 8 points	Practical course	10 – 16 points
	min – max										
Theoretical course	2- 8 points										
Practical course	10 – 16 points										
11.	Subject program goals (competences) and study results:	<ul style="list-style-type: none"><li>to learn and master skills within rational diagnostics and contemporary treatment of surgical diseases</li><li>to become familiar with the basic principles of diagnosing operational, preparation and treatment within the general surgery</li><li>enable student to rational estimates and indicates acute surgical diseases, witch if timely treatment is not diagnosed and treated may end fatal</li></ul>									

		<ul style="list-style-type: none"> <li>to enable the student to evaluate and treat survival diseases of the central nervous system, neck and chest organs, cardiac and vascular diseases, digestive diseases, urological diseases, children's surgical disease, plastic and reconstructive corrections, locomotor system injuries and internal organs</li> </ul>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<ul style="list-style-type: none"> <li>General and military surgery</li> <li>Disease and surgical treatment of the central nervous system</li> <li>Disease and surgical treatment of lung disorder</li> <li>Disease and surgical treatment of the disorder of cardiac and vascular diseases</li> <li>Disease and surgical treatment of the disorder of the digestive system</li> <li>Disease and surgical treatment of the disorder of the urogenital system</li> <li>Disease and surgical treatment of violations of children's diseases</li> <li>Disease and surgical treatment of the disorder of the skin with plastic and reconstructive surgery interventions</li> <li>Disease and surgical treatment of injuries locomotory system</li> </ul>
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program
14.	<b>Description of the subject's study and working methods in details</b>	Interactive lectures, tutorials and seminars. Mastering skills and practical application of the gained theoretical knowledge
15.	<b>Total available time frame</b>	600 classes
16.	<b>Forms of teaching activities</b>	16.1. Lessons – theoretical lessons, hours 103 classes
		16.2. Practical lessons (laboratory, auditory), seminars, team work: hours Practical: 180 classes Seminars: 52 classes
		16.3. Practice: hours
17.	<b>Other forms of activities</b>	17.1. Project tasks: hours 65 classes
		17.2. Individual tasks: hours 100 classes
		17.3. Studying at home: hours 100 classes
18.	<b>Requirements for signature</b>	Attending on minimum 51% of all classes, seminars, practice course and project tasks.
19.	<b>Methods of assessment</b>	
	19.1. Tests: points	<p>There are six written tests Covers all areas of surgery in various combinations, depending on the group in which the student listens in the current schedule:</p> <ol style="list-style-type: none"> <li>General Surgery and Traumatology</li> <li>Thoracic vascular and cardiac surgery</li> <li>Digestive surgery</li> <li>Neurosurgery</li> <li>Urology</li> </ol>

			6. Children and Plastic and Reconstructive Surgery The students from one test can get: 2-4 points, total for six tests: 12-24 points			
	19.2.	Seminar paper/project, written and oral presentation: points	Students can be assigned to make a seminar work, project od written presentation, to get an extra points (from 1 to 3), for calculating a bigger final grade.			
	19.3.	Final exam: points	<b>Final exam:</b> practical + oral Practical part (according to the catalog od skills): examination of the patient, diagnosis, therapy <b>8-12 points</b> Oral part (integrative) – 4 questions that are not questioned in details, but integrative knowledge is important for understanding the entity of the case and the medical practice  <b>24-40 points</b> (for 10=40 points; for 9 = 37-39 points; for 8=34-36 points; for 7=31-33 points; for 6=28-30 points) • The student is obligated to win a minimum of the envisaged points for each part of the exam, to be able to registered points for the final exam. Otherwise, the test is considered not passed.			
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation of the subject, the teachers and collaborators participating in the teaching			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Townsend CM, Beauchamp D,	Sabiston textbook of surgery	New York: Saunders	2008
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year

		1.	Greg McLatchie, Borley N, Chikwe J	Oxford Handbook of Clinical Surgery	Oxford University Press	2013
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Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	GYNECOLOGY AND OBSTETRICS			
2.	Code	MED 422			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Gynecology and Obstetrics			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Fourth/ Fift (IV/V)	Semester	Eighth, ninth (VIII/ IX)
7.	ECTS credits	12			
8.	Professor (when more professors, responsible professor is assigned)	Associate Prof. Ana Daneva Markova, PhD, MD - responsible professor *Lectures held by the professors from the Department of Gynecology and Obstetrics			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: filled for enrollment in VII semester. In order to take the final exam, the student should obtain the minimum points from the continual assessments			
11.	Subject program goals (competences) and study results:	<ul style="list-style-type: none"><li>• The student learns and mastered the skills within the framework of rationaldiagnostics and the modern treatment of gynecological diseases.</li><li>• To familiarize the student with the basic principles of diagnosing operationalpreparation and treatment within Gynecology and Obstetrics.</li><li>• The student can rationally be able to evaluate and refer to the treatment of acutegynecological and obstetric diseases, which if not diagnosed and treated in a timely manner can end up fatal.</li><li>• Student shall be able to evaluate and treat gynecological and obstetric diseases, monitore normal pregnancy</li></ul>			
12.	Subject content in details by chapters and units, with study results for every chapter	<b>Course content:</b> <b>Theoretical course:</b> <b>A. Gynecology Contents:</b> <ul style="list-style-type: none"><li>• Introduction to gynecology and ethical principles</li></ul>			



		<ul style="list-style-type: none"> <li>• Examination and objective finding in gynecology</li> <li>• Gynecological neuroendocrinology</li> <li>• Pelvic anatomy</li> <li>• Embryology with histology</li> <li>• Basics in surgical endocrinology</li> <li>• Growth, development and sexual maturation</li> <li>• Disorders of puberty and adolescence</li> <li>• Menstrual cycle and its disorders</li> <li>• Sexually transmitted diseases</li> <li>• Inflammation of the genital organs</li> <li>• Emergency and critical conditions in gynecology</li> <li>• Reproductive endocrinology and male infertility</li> <li>• Tubal factor infertility and endometriosis</li> <li>• Assisted reproduction</li> <li>• Pelvic prolapse</li> <li>• Urinary incontinence</li> <li>• Genital fistulae</li> <li>• Diagnostic methods in gynecology</li> <li>• Perimenopausal HRT</li> <li>• Contraception and planning of the family</li> <li>• Benign tumors of the vulva, vagina and cervix</li> <li>• Benign tumors on the body of the uterus</li> <li>• Benign tumors of adnexa</li> <li>• Malignant tumors on the vulva, vagina and cervix</li> <li>• Malignant tumors on the body of the uterus</li> <li>• Malignant tumors of adnexa</li> <li>• Early diagnosis and prevention of cervical cancer and colposcopy</li> <li>- Benign and malignant tumors of the breast</li> </ul> <p>Understanding the basics concepts of Gynaecology care</p> <p><b>B. Content by Obstetrics:</b></p> <ul style="list-style-type: none"> <li>• Conception. Morphological development of the placenta.</li> <li>• Fetus and placental membranes.</li> <li>• The construction and function of the placenta.</li> <li>• Placental hormones.</li> <li>• Placenta previa</li> <li>• Abruptio placentae</li> <li>• The use of drugs in pregnancy - Urgent conditions in pregnancy</li> <li>• Graviditas E.U.</li> <li>• Bleeding in the first and second half of pregnancy</li> <li>• Breech delivery</li> <li>• Abnormalities on the placenta.</li> <li>• Embryopathy and fetopathy.</li> <li>• Prenatal diagnostics.</li> <li>• Genetic counseling.</li> <li>• Normal and abnormal pelvis</li> </ul>
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		<ul style="list-style-type: none"> <li>• Multiple pregnancy</li> <li>• Infections in pregnancy</li> <li>• PPO,ALSy</li> <li>• IUGR</li> <li>• Rh incompatibility and Rh sensibilization</li> <li>• Diagnostic and therapeutic interventions in pregnancy</li> <li>• Gestosis</li> <li>• Fetus as an object</li> <li>• Normal labor. Normal deliveries.</li> <li>• Fetal distress</li> <li>• Preterm delivery.</li> <li>• Prolonged pregnancy - Diabetes in pregnancy</li> <li>• Dystocia.</li> <li>• Induction of labor</li> <li>• Mall rotations and mall presentations</li> <li>• Completion of delivery with a vaginal intervention</li> <li>• Completion of delivery with S.C.</li> <li>• Anesthesia and analgesia in obstetrics</li> <li>• Ultra sound in pregnancy</li> <li>• Diseases of the trophoblast</li> <li>• Puerperium</li> <li>• Pre-term and postpartum bleeding</li> <li>• Internist and surgical diseases in pregnancy</li> <li>• Ethical and legal aspects in perinatology</li> </ul> <p>Competences and results : Understanding the basics concepts of Obstetric care</p> <p><b>Practical course:</b></p> <p><b>A. Gynecology</b></p> <ul style="list-style-type: none"> <li>• Gynecological history</li> <li>• Gynecological examination</li> <li>• Cytological investigations</li> <li>• Taking swabs</li> <li>• Rtg diagnostics in gynecology</li> <li>• Laparoscopic diagnostics in gynecology</li> <li>• Biochemical investigations in gynecology</li> <li>• RCUI and CEF</li> <li>• Ultrasound diagnostics</li> <li>• Acute conditions of gynecological origin: acute pain and acute bleeding</li> <li>• Painful syndrome in gynecology</li> <li>• Forensic research in gynecology</li> <li>• Benign diseases in gynecology: vulva, uterine cervix, uterine body, adnexa</li> </ul>
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		<ul style="list-style-type: none"><li>• Malignant diseases in gynecology: vulva, uterine cervix, uterine body, adnexa - Treatment of an urogenital patient</li><li>• Operative cuts, suture, suture material and instruments in gynecological surgery</li></ul> <p><b>B. Obstetrics</b></p> <ul style="list-style-type: none"><li>• Obstetric history</li><li>• Obstetric examination</li><li>• Clinical treatment of the pregnant woman</li><li>• Laboratory and radiographic diagnostics in</li><li>• Gravidity</li><li>• Keeping a normal birth</li><li>• Leading to birth in the pelvic presentation of the</li><li>• Fetus</li><li>• Abortion techniques in obstetric practice reui</li><li>• Childbearing of maternity pathways,</li><li>• Epizoototomy and suture</li><li>• Obstetric surgery: external bone, perforatio capitis, forceps - surgery to complete the birth in the pelvic fetus</li></ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program Passed exam is obligated for Gynecology and Obstetrics Clinical Practice		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive lectures, exercises / seminars		
15.	<b>Total available time frame</b>	360 classes		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	Gynecology – 64 Obstetrics - 86
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	Gynecology - 56 classes Obstetrics – 60 classes
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	94 hours
18.	<b>Requirements for signature</b>	In order to obtain a signature, a student is required to attend the theoretical and practical classes and to score minimum points: 12 (attendance of theoretical classes -1, attendance of practical courses 11)		
19.	<b>Methods of assessment</b>			
	19.1.	Tests: points		8 min-16 max
	19.2.	Active participation:		12- min- 17 max
	19.3.	Final exam: points		Exam of practical skills: 13 min- 22 max Oral: 27 min- 45 max
20.	<b>Grading criteria (points/grade)</b>	up to 59 points		5 (five) (F)

		from 60 to 68 points	6 (six) (E)			
		from 69 to 76 points	7 (seven) (D)			
		from 77 to 84 points	8 (eight) (C)			
		from 85 to 92 points	9 (nine) (B)			
		from 93 to 100 points	10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process	Student anonymous evaluation of the subject and the teachers and collaborators participating in the teaching				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Bickerstaff H, Kenny C L.	Gynaecology by ten Teachers, 20 <sup>th</sup> Edition.	London, New York: CRC Press	2017
		2.	Kenny CL, Myers JE	Obstetric by ten Teachers, 20 <sup>th</sup> Edition.	London, New York: CRC Press	2017
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Hoffman B, Schorge J, Halvorson L, Karen Bradshaw K, Cunningham F	Williams Gynecology Second Edition	Chicago: McGraw Hill Profesional	2012
		2.	Cunningham F, Leveno K, Bloom S, Hauth J, Rouse D, Spong C	Williams Obstetric 23 <sup>rd</sup> Edition	Chicago: McGraw Hill Professional	2009

Number:42

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
1.	<b>Subject</b>	<b>ONCOLOGY</b>
2.	<b>Code</b>	MED 423
3.	<b>Study program</b>	General medicine
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine Department of Oncology and Radiotherapy
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year study

6.	Academic year/semester	Year	Fourth (IV)	Semester	Eight (VIII)
7	ECTS credits	2			
8.	Professor (when more professors, responsible professor is assigned)	Associate Prof. Violeta Klisarovska- responsible professor *Lectures held by the professors from the Department of Oncology and Radiotherapy			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: requirement met for the VII <sup>th</sup> semester. In order to take the final exam, the student should obtain the minimum points in the continual assessment. If the student has not obtained the minimum points in the continual assessment, he/she will be obligated to pass it before the final exam. <div><div>Theoretical course</div><div>Practical course</div><div>min – max</div><div>1- 3 points</div><div>10 – 16 points</div></div>			
11.	Subject program goals (competences) and study results:	Students to become acquainted with: – terminology in oncology – epidemiology of cancer, cancer prevention and early detection – diagnostic procedures and staging – principles of cancer surgery, chemotherapy, radiotherapy, hormonotherapy, target therapy, immunotherapy, principals of multidisciplinary treatment, side effects of specific oncological treatments – special problems in oncology and oncological emergencies – clinical characteristics, diagnosis and treatment of the most common solid malignant diseases (breast cancer, lung cancer, genitourinary malignancy, gynaecological malignancy, gastrointestinal cancers, head and neck cancers, CNS cancers, skin cancers, malignant melanoma, bone and soft tissues cancers)			
12.	Subject content in details by chapters and units, with study results for every chapter	<b>Module 1: 3T (theory) + 2P (practise) classes</b>  1. Introduction to oncology, oncological terminology and cancer related terms – Epidemiology of cancer – Cancer prevention, screening, early diagnosis – Pathology and molecular biology of cancer – Approach to cancer patient – Tissue diagnosis in cancer – Evaluation of patient, imaging modalities, staging  <b>Module 2: 3T (theory) + 5P (practise) classes</b>  1. Therapeutic modalities in oncology – Surgical oncology			

		<ul style="list-style-type: none"> <li>– Radiotherapy</li> <li>– Chemotherapy</li> <li>– Hormonotherapy</li> <li>– Target therapy</li> <li>– Immunotherapy</li> </ul> <p>2. Multidisciplinary approach</p> <p>3. Acute and chronic side effects of cancer therapy</p> <p><b>Module 3: 3T (theory) + 5P (practise) classes</b></p> <p>1. Malignant tumours of thorax</p> <ul style="list-style-type: none"> <li>– Lung cancer</li> <li>– Breast cancer</li> <li>– Mediastinal tumours</li> </ul> <p><b>Module 4: 5T (theory) + 5P (practise) classes</b></p> <ul style="list-style-type: none"> <li>– Genitourinary malignancy</li> <li>– Gynaecological malignancy</li> <li>– Gastrointestinal cancers</li> <li>– Head and neck cancers</li> <li>– CNS cancers</li> <li>– Skin cancers and malignant melanoma</li> <li>– Bone and soft tissues cancers</li> </ul> <p><b>Module 5: 3T (theory) + 3P (practise) classes</b></p> <p>1. Special problems in oncology and oncological emergencies</p> <ul style="list-style-type: none"> <li>– Raised intracranial pressure</li> <li>– Spinal cord compression</li> <li>– Bone marrow suppression</li> <li>– Malignant effusions</li> <li>– Superior vena cava obstruction</li> <li>– Hypercalcemia</li> <li>– Paraneoplastic neurological syndromes</li> <li>– Cancer vein thrombosis</li> </ul> <p>2. Cancer pain</p> <p>3. Terminally ill patient</p>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Theoretical and interactive lectures organised in 5 thematic modules concurrently with practical group work and exercises		
15.	<b>Total available time frame</b>	60 classes		
16.		16.1.	Lessons – theoretical lessons, hours	20 hours

	Forms of teaching activities		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours		25 hours
			16.3.	Practice: hours		
17.	Other forms of activities		17.1.	Project tasks: hours		
			17.2.	Individual tasks: hours		
			17.3.	Studying at home: hours		15 hours
18	Requirements for signature		In order to take the signature, the student should obtain minimum points in both theoretical and practical courses.			
19.	Methods of assessment					
	19.1.	Tests: points	Continual assessment 1 (test) Included Module 1,2,3		min-max 10-16 points	
			Continual assessment 2 (test) Included Module 4,5		10-16 points	
	19.2.	Seminar paper/project, written and oral presentation: points	Seminar works Written exam Practical and Oral exam		21-37 points 8-12 points	
			19.3. Final exam: points		Complete final exam	
20.	Grading criteria (points/grade)		up to 59 points		5 (five) (F)	
			from 60 to 68 points		6 (six) (E)	
			from 69 to 76 points		7 (seven) (D)	
			from 77 to 84 points		8 (eight) (C)	
			from 85 to 92 points		9 (nine) (B)	
			from 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Attendance of students to classes and interactive participation in theoretical and practical lessons.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	deVita V	Cancer: Principles and Practice of Oncology, 12th edition	Available online at: LWWHealthLibrary.com/oncology	2022

		2.	Kerr DJ, Haller G, Cornelis J, van de Velde, Baumann M	Oxford Textbook of Oncology, 3rd Edition	Oxford University Press	2016
		Additional literature				
		Number	Author	Title	Publisher	year
	22.2.	1.	Halperin EC, Wazer DE, Perez CA, Brady LW	Perez & Brady's Principles and Practice of Radiation Oncology, 7th edition	Available online at: LWWHealthLibrary.com/oncology	2018

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Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	CLINICAL BIOCHEMISTRY			
2.	Code	MED 424			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Biochemistry and Clinical Chemistry			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Fourth (IV)	Semester	Eighth (VIII)
7.	ECTS credits	1,5			
8.	Professor (when more professors, a responsible professor is assigned)	Associate Prof. Irena Kostovska, PhD, MD - responsible professor *The lectures are given by all members of the Department of Biochemistry and Clinical Chemistry			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: requirement met for the VII <sup>th</sup> semester. To enroll in the final exam the students are requested actively to participate in the planned activities.			
11.	Subject program goals (competencies) and study results:	<ul style="list-style-type: none"> <li>To understand and apply the laboratory findings in the diagnosis of various diseases;</li> <li>To prepare seminar papers (case reports) related to laboratory parameters important for clinical practice and differential diagnosis</li> </ul>			
12.	Subject content in details by chapters and units, with study	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>Clinical enzymology;</li> </ul>			



	results for every chapter	<ul style="list-style-type: none"><li>Plasma proteins and their roles in the diagnosis of various diseases;</li><li>Hyperlipoproteinemia, atherosclerosis, CAD, hyperlipoproteinemia;</li><li>Liver function tests; jaundice, cirrhosis;</li><li>Clinical biochemistry of renal disease; biochemical parameters in the diagnosis of kidney disease, ABI, HBI;</li><li>Tumor markers in diagnosis and prognosis of malignity disease;</li><li>Diabetes mellitus;</li><li>Neonatal screening;</li><li>Fluid and electrolyte balance ;</li><li>Biological factors that influence biochemical parameters.</li></ul> <b>Practical course:</b> <ul style="list-style-type: none"><li>Preparation and oral presentation of seminar paper;</li><li>Visit to a clinical laboratory.</li></ul>		
13.	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject's study and working methods in details	Classroom-oriented lectures, interactive lectures, group work, practical training, seminar paper		
15.	Total available time frame	45 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	15
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	4
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	11
		17.3.	Studying at home: hours	10
18.	Requirements for signature	To receive the professor's signature for the course and to enroll in the final exam, the students are requested actively to participate in the planned activities.		
19.	Methods of assessment			
	19.1.	Tests: points	/	
	19.2.	Seminar paper/project, written and oral presentation: points	<b>Theoretical course</b> min.-max. 2-3 <b>Practical course</b> min.-max. 4-7 <b>Seminar paper</b> min.-max. 6-10	
	19.3.	Final exam: points	<b>Practical final exam</b> min.-max. 48-80	
20.	Grading criteria (points/grade)	Up to 59 points	5 (five) (F)	
		From 60 to 68 points	6 (six) (E)	
		From 69 to 76 points	7 (seven) (D)	
		From 77 to 84 points	8 (eight) (C)	

		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process	Anonymous student evaluation of the subject, teachers, and collaborators involved in the educational activities				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Gaw A, Michael J. Murphy MJ, Srivastava R, Cowan RA, O'Reilly D	Clinical Biochemistry 5th Edition	London: Elsevier	2013
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Lieberman M	Mark’s Basic Medical Biochemistry	Philadelphia: Lippincott Williams & Wilkins	2013

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>CLINICAL PHARMACOLOGY</b>			
2.	<b>Code</b>	MED 425			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Preclinical and Clinical Pharmacology with Toxicology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Fourth (IV)	Semester	Eighth (VIII)
7.	<b>ECTS credits</b>	1.5			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Dimche Zafirov PhD, MD - responsible professor *Lectures held by all professors from the Department			
9.	<b>Language of the study</b>	English			

10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: Fulfilled condition to enroll in the VIII semester and passed exam of Pharmacology. In order to take the final exam, the student should obtain the minimum points in the continual assessments. If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.  <div><div>Theoretical course</div><div>Practical course</div></div> <div><div>min – max</div><div>1.8- 3 points</div><div>4.2 – 7 points</div></div>		
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"><li>• Introduction to the subject and tasks of the clinical pharmacology and its practical meaning in the today's therapy;</li><li>• Understanding the basics of clinical pharmacology and training the students to use its principles in practice, in particular to specific patients groups;</li><li>• Introduction to basic knowledge in managing clinical studies;</li><li>• Training the students to identify, follow and report adverse effects of drugs;</li><li>• Optimisation, therapy individualisation and dosing regimens of specific drugs;</li><li>• Knowledge of clinical importance of drug interactions..</li></ul>		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"><li>• Introduction to clinical pharmacology;</li><li>• Design and conduct of clinical drug studies; bioequivalence studies and good clinical practice standards during study performance;</li><li>• Drug interactions and its clinical significance;</li><li>• Use of drugs in elderly patients, children, during pregnancy and lactation and in patients with renal and hepatic impairment;</li><li>• Adverse drug reactions and Pharmacovigilance.</li></ul> <b>Practical course:</b> <ul style="list-style-type: none"><li>• Preparation of key documents for conduct of clinical trials (study protocol, case report file, informed consent);</li><li>• Individual dosing models for drugs, determination of dosing regimens according to drug blood concentrations and according to therapeutic effect of specific drug groups;</li><li>• Practical aspects of adverse effects reporting using electronic reporting system.</li></ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching during lectures, practical trainings and seminars.		
15.	<b>Total available time frame</b>	45 classes		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	20

		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18	Requirements for signature	In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present. If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam  Active participation (points)  Theoretical course Practical course		
min – max 1.8 – 3 4.2 – 7				
19.	Methods of assessment			
19.1.	Tests: points	min – max Continual assessment - points 18 – 30  Continual assessment of knowledge: – Written test 12 – 20 – 1 study case of individual dosage regiment (tim work) 6 – 10  The student is obligated to achieve a minimum of the intended points for each part of the assessment to pass the continual assesment. Otherwise the final exam is considered failed.		
19.2.	Seminar paper/project, written and oral presentation: points			
19.3.	Final exam: points	min – max Oral examination* points 24 – 40 Practical examination** points 6 – 10  *Oral examination (integrative) – 4 questions on the basis of which the integrative knowledge in the field of Clinical Pharmacology is assessed, which is important for understanding the subject.  **Practical examination (catalog skills) – Text materials prepared for the practical course.  The student has to fulfill the minimum reuired points for every part of the examination in order to be able to get the scores for the final examination. Otherwise the final exam is considered failed.		
20.	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)

		From 60 to 68 points	6 (six) (E)			
		From 69 to 76 points	7 (seven) (D)			
		From 77 to 84 points	8 (eight) (C)			
		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process	Student anonymous evaluation for the subject, teachers and associates participating in the teaching				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Ritter JM, Lewis LD, Mant TKG, Ferro A	A Textbook of Clinical Pharmacology ant Therapeutics	London: Hodder Arnold, an imprint of Hodden Education	2008
		2.	Department of pharmacology and toxicology	Authorized lectures		
		3.	Rang HP, Ritter JM, Flower R	Rang and Dale’s Pharmacology, Ninth edition	New York: Elsevier	2020
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Atkinson AA.	Principles of Clinical Pharmacology, Second Edition	New York: Elsevier	2007

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>PEDIATRICS</b>			
2.	<b>Code</b>	MED 511			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Pediatrics			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Ninth, tenth (IX, X)
7.	<b>ECTS credits</b>	11			
8.	<b>Professor (when more professors, responsible)</b>	Associate Prof. Sonja Bojadzieva, PhD, MD - responsible professor *Lectures held by all professors from the Department of Pediatrics			

	professor is assigned)	
9.	Language of the study	English
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: the criteria for enrollment in the VII semester should be met. In order to take the final exam, the student should obtain the minimum points from the continual assessments.
11.	Subject program goals (competences) and study results:	<b>Objectives of the program (competencies):</b> <ul style="list-style-type: none"> <li>• The students should gain basic knowledge, which will be applied in a clinical setting in order to handle normal and abnormal growth and development</li> <li>• (physical, physiological, psycho-social) of the children from birth to adolescence.</li> <li>• The student should be able to provide basic pediatric care to children from different age groups (neonates, infants, toddlers, children and adolescents).</li> <li>• The students should gain the appropriate skills and knowledge necessary for the proper handling of the most common and important diseases and urgencies in Pediatrics</li> <li>• The students should gain knowledge for professional conduct and communicational abilities necessary for problem-solving (problem solving skills).</li> <li>• The students should be equipped for life-long learning , necessary for their further professional development</li> </ul>
12.	Subject content in details by chapters and units, with study results for every chapter	<b>Contents of the program:</b> <b>Theoretical course:</b> <b>Social and preventive pediatrics</b> <ul style="list-style-type: none"> <li>• Social-economical factors that influence children's health.</li> <li>• Vital statistics for the children's health in R. of N. Macedonia.</li> <li>• Organization of the health-care system, National preventive programs, mandatory immunizations</li> </ul> <b>Growth and development</b> <ul style="list-style-type: none"> <li>• Normal growth and growth charts, abnormalities of the growth and development.</li> <li>• Evaluation of various developmental milestones and discovering of developmental abnormalities.</li> </ul> <b>Care for the sick child</b> <ul style="list-style-type: none"> <li>• Primary and hospital care for the children.</li> <li>• Ethics.</li> <li>• Basics of evidence based medicine.</li> </ul> <b>Pediatric emergencies/ accidents/ poisonings</b> <ul style="list-style-type: none"> <li>• Principles of emergency pediatrics: respiratory, cardiovascular, neurologic and metabolic emergencies, poisonings and serious trauma</li> </ul> <b>Genetics and dysmorphology</b> <ul style="list-style-type: none"> <li>• Chromosome disorders, monogenic disorders, multifactorial inheritance and dysmorphism</li> </ul>

		<p><b>Perinatology/ Neonatology</b></p> <ul style="list-style-type: none"> <li>• A normal newborn, neonatal resuscitation, growth of the newborn, neonatal seizures, respiratory disturbances, jaundice, metabolic disorders, hematologic disorders, infections, birth trauma and urgent surgical conditions.</li> </ul> <p><b>Growth and puberty</b></p> <ul style="list-style-type: none"> <li>• Disorders of the pubertal development</li> </ul> <p><b>Nutrition</b></p> <ul style="list-style-type: none"> <li>• Nutritional needs, breastfeeding , formula feeding , nutritional disorders</li> </ul> <p><b>Nephrology</b></p> <ul style="list-style-type: none"> <li>• Nephrotic syndrome, glomerulonephritis, urinary tract infection, renal failure, enuresis, hypertension</li> </ul> <p><b>Cardiology</b></p> <ul style="list-style-type: none"> <li>• Rheumatic fever, Congenital heart diseases, heart failure, infective endocarditis, arithmias</li> </ul> <p><b>Respiratory system</b></p> <ul style="list-style-type: none"> <li>• Upper and lower respiratory tract diseases, bronchial asthma, chronic pulmonary diseases, cystic fibrosis</li> </ul> <p><b>Infections/ Allergies/Immunity</b></p> <ul style="list-style-type: none"> <li>• Conditions accompanied by fever, Specific infections, anaphylactic reactions, urticaria (hives), allergies, immunizations, immunodeficiency disorders</li> </ul> <p><b>Endocrinology</b></p> <ul style="list-style-type: none"> <li>• Diabetes mellitus, hypoglycemia, hypothyroidism, hyperthyroidism, disorders of the parathyreoid glands, adrenal cortical insufficiency, Cushing’s syndrome</li> </ul> <p><b>Metabolism</b></p> <ul style="list-style-type: none"> <li>• Inborn errors of the metabolism, neonatal screening, gastroenteritis, dehydration and re-hydration, acid-base balance (interpretation and disorders)</li> </ul> <p><b>Neurology</b></p> <ul style="list-style-type: none"> <li>• Mental retardation, CNS infections, cerebral palsy, hydrocephalus, microcephaly, neuromuscular disorders</li> </ul> <p><b>Gastroenterology/ Hepatology</b></p> <ul style="list-style-type: none"> <li>• Abdominal pain, abdominal mass, malabsorbtion, inflammatory bowel diseases, liver diseases, cirrhosis and portal hypertension, hepato-splenomegaly.</li> </ul> <p><b>Hematology/Oncology</b></p> <ul style="list-style-type: none"> <li>• Anaemias , hemorrhagic syndrome, the most common malignancies in children</li> </ul> <p><b>Behavioral pediatrics</b></p> <ul style="list-style-type: none"> <li>• Behavioral and social problems in childhood, ethic and professional behaviors relevant for the pediatricians</li> </ul> <p><b>Rheumatology</b></p> <ul style="list-style-type: none"> <li>• Evaluation of the musculo-skeletal system, variations of the normal posture, diseases of the hip, knee and foot, diseases of the spine, back and neck, arthritis</li> </ul>
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		<b>Skin</b> <ul style="list-style-type: none"><li>Rash in the neonatal/infant period, infections and infestations, rash during systemic diseases</li></ul> <b>Adolescent medicine</b> <ul style="list-style-type: none"><li>Communication with adolescents , common health problems</li></ul> <b>Practical course:</b> Mastering of clinical skills and the practical implementation of the acquired theoretical knowledge		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program. Passed exam is precondition for Pediatrics Clinical Practice and Pediatrics Seminars		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive lectures, clinical exercises and exercises in primary health-care, problemoriented clinical scenarios, practicing of skills on mannequins, a project exercise, problem oriented seminars (case based)		
15.	<b>Total available time frame</b>	330 hours 180 hours of lectures, exercises and seminars 150 hours of home learning		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	90 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	90 hours
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	150 hours
18.	<b>Requirements for signature</b>			
19.	<b>Methods of assessment</b>			
	19.1.	Tests: points	<b>min.-max.</b> <b>Continuous evaluation * 3: score points 30-51</b>  *Continuous control of the gained knowledge (colloquiums): 3 written tests (multiple choice) All the fields in Pediatrics are covered: <b>Continual assessment 1:</b> eonatology, nutrition, genetics, immunology, pulmology , 10-17 score points <b>Continual assessment 2:</b> endocrinology, emergency pediatrics, metabolic diseases/disorders, nephrology, gastroenterology, 10-17 score points <b>Continual assessment 3:</b> hemato-oncology, neurology, cardiology, 10-17 score points	
	19.2.	Seminar paper/project, written and oral presentation: points	<b>min. - max.</b> <b>Seminars*points30 - 40</b> min.-max Theoretical teaching score points 2 - 6	



			Practical teaching score points 8 - 10 <b>Conditional criteria:</b> To complete the seminar the student is obliged to attend and take active participation in the seminars, also to achieve the necessary score minimum  To obtain the right to a final exam the student is obliged to pass the planed continuous evaluations or to score a 30% minimum of the total amount of points , wherein during the exam session first he must pass the continuous evaluations he hasn't passed and then go to a final exam  The score for the subject is formed according a table of scores, which on the other hand is formed according to the sum of the score points from all the activities, continuous evaluations and the final exam			
	19.3.	Final exam: points	min.-max. Score points 20-33 <b>The final integrative exam consists of :</b> Taking of the patient's medical history, differential diagnosis, physical exam, skill according to the catalog of skills + an integrated oral exam where the integrated knowledge necessary for the understanding of the plenum of the subject and the medical practice is evaluated . <b>The exam is conducted on one real patient and one virtual case (practical and oral part) min.-max.20-33 score points 10=30-33 score points, 9=27-29 score points, 8=24-26 score points, 7=21-23 score points, 6= 18-20 score points</b>			
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Anonymous evaluation by the students of the subject, the teachers and the collaborators who participate in the education			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	<a href="#">Kliegman R,</a> <a href="#">Stanton B,</a> <a href="#">Geme JS,</a> <a href="#">Schor N,</a> <a href="#">Behrman R</a>	Nelson Textbook of Pediatrics, 21th edition	New York: Elsevier	2019



		<ul style="list-style-type: none"><li>Contemporary treatment will be done according to the newest achievements in medicine based on evidence.</li></ul>		
12.	Subject content in details by chapters and units, with study results for every chapter	<ul style="list-style-type: none"><li>Basics in orthopedic surgery</li><li>Congenital disorders of the bone and joint system</li><li>Inflammatory diseases of the bone and joint system</li><li>Degenerative diseases of the bones and joints</li><li>Normal and disturbed healing of the bone</li><li>Tumors of the muscle-skeletal system</li><li>Congenital and acquired diseases of the locomotor system (neck, spine, pelvis, thorax, shoulder, elbow, wrist, hand, knee, foot)</li><li>Canalicular syndromes of the upper and lower extremities</li><li>Orthopedic devices</li></ul>		
13.	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject's study and working methods in details	<ul style="list-style-type: none"><li>Practical applications and clinical skills in orthopedics</li><li>Measuring of the size and length of the upper and lower extremities</li><li>Clinical signs and tests for diagnosis knee injuries</li><li>Clinical signs and tests for diagnosis osteoarthritis of the joints</li><li>Practical course on phantoms</li><li>Measurements and tests for diagnosis of spine deformities</li><li>Podometric measurements, diagnosis and treatment of congenital foot deformities in children</li><li>Clinical signs and tests for early diagnosis of congenital hip dysplasia in children</li><li>Clinical approach for diagnosis of soft tissue and bone tumors</li><li>Introduction into orthopedic surgical techniques</li></ul>		
15.	Total available time frame	90 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	34
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	21
		16.3.	Practice: hours	0
17.	Other forms of activities	17.1.	Project tasks: hours	0
		17.2.	Individual tasks: hours	0
		17.3.	Studying at home: hours	35
18	Requirements for signature	In order to get a signature, the student should obtain minimum points in both the theoretical and the practical courses and seminars and to win minimum of total points. In order to take the final exam, the student should pass the continuous tests or win minimum 60% of total points of the continuous tests; than the student may approach to the final exam. The grade in the comprehensive exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities, continuous tests and final exam.		
19.	Methods of assessment			
	19.1.	Tests: points	26-45	
	19.2.	Seminar paper/project, written and oral presentation: points		

	19.3.	Final exam: points			21-36	
20.	Grading criteria (points/grade)			Up to 59 points		5 (five) (F)
				From 60 to 68 points		6 (six) (E)
				From 69 to 76 points		7 (seven) (D)
				From 77 to 84 points		8 (eight) (C)
				From 85 to 92 points		9 (nine) (B)
				From 93 to 100 points		10 (ten) (A)
21.	Methods of monitoring the quality of the teaching process			Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities		
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Greenspan A.	Orthopedic Imaging - A Practical Approach	Philadelphia: LWW	2012
		2.	Zitelli BJ, Davis HV.	Atlas of Pediatric Physical Diagnosis (Chapter – Orthopedics)	Philadelphia: LWW	2011
		3.	Rakel RE.	Textbook of Family Medicine: Orthopedics	Philadelphia: LWW	2011
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Pynsent PB, Fairbank JCT, Carr EJ.	Outcome Measures in Orthopedics and Orthopedic Trauma	London: Routledge	2004

Number:47

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>ANAESTHESIOLOGY WITH REANIMATION</b>			
2.	<b>Code</b>	MED 513			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Department of Anaesthesiology with Reanimation			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6 - year studies			
6.	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Ninth (IX)
7.	<b>ECTS credits</b>	2 credits			
8.	<b>Professor (when more professors, responsible)</b>	Professor Andrijan Kartalov, - PhD, MD - responsible professor *Lectures held by the professors from the Department of Anaesthesiology with Reanimation			

	<b>professor is assigned)</b>	
9.	<b>Language of the study</b>	English
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: fulfilled condition for the VII semester. In order to take the final exam, the student should obtain the minimum points from the three continual assessments.
11.	<b>Subject program goals (competences) and study results:</b>	<p><b>Teaching goals:</b> The student has to acquire:</p> <ul style="list-style-type: none"> <li>• Basic knowledge of anaesthesiology (types of anaesthesia and the impact the anaesthetics have on the human body, anaesthesiology check-up, anaesthesia preparation, peroral monitoring and peroral administration of patient with anaesthesia, general and local anaesthetics, opiates, muscle relaxant, post anaesthesiology healing, types of anaesthesiology complications and their salvation)</li> <li>• Resuscitation as science and its practical appliance in the doctors practice, (elements of basic and advance life support and ways of manipulation at resuscitation, resuscitation at accidental conditions (electric shock, anaphylaxis, drowning, trauma etc.))</li> <li>• Basis of intensive care (urgent procedures at unconsciousness patients, acute respiratory weakness, electrolyte misbalance, and clinical manifestation of the different types of shocks and their therapy)</li> <li>• Basic knowledge of healing acute chronic pain</li> </ul> <p>To be capable of:</p> <ul style="list-style-type: none"> <li>• Reanimation, basic and progressive</li> <li>• Oxygenotherapy</li> <li>• Resuscitation of the circulation volume</li> <li>• Artificial alimentation</li> <li>• Transport of critical patient</li> </ul> <p>Results: Knowledge and understanding: The student will acquire knowledge on types of anesthesia, medications in anesthesia, per-oral monitoring, postanesthesia period care, types of shock and therapy, reanimation Key skills: The student will be able to apply modern therapy in treatment of acute and chronic pain, basic pre-operation treatment and preparation of patient before anesthesia, infiltrative anesthesia, resuscitation protocols for OOH and NOH application, reanimation and urgent procedures for hosting critical patients, polytraumatic and other patients in urgent condition.</p>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b> <b>Anesthesiology:</b></p> <ul style="list-style-type: none"> <li>• Introduction to the subject</li> <li>• Pre-Anesthesiology checkup of patient for Anesthesia/operation</li> <li>• Types of anesthesia, medications in anesthesia</li> <li>• Surveillance and monitoring of patient (basic and progressive)</li> <li>• Patients care in post-operation period</li> </ul> <p><b>Reanimation:</b></p>

		<ul style="list-style-type: none"><li>SBMO, cardiopulmonary reanimation (SBO)-ABC, basic keeping in life, DEF, medicaments treatment of KA, (EKG manifestations at KA, defibrillation)</li><li>Reanimation of accidental conditions: drowning, deathly electric strike. Cerebral death, Artificial ventilation</li><li>Definition and types of shock-clinics and therapy</li><li>Pre-hospital treatment with infusion, plasma, blood and blood derivates transfusion, (bleeding and water-salted disbalance at adults and children)</li><li>First reanimation, at consciousness patient with unknown nature, reanimation of acute respiratory weakness, acute neuromuscular weakness, status epilepticus, status asthmaticus</li></ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"><li>Anaesthesiology check-up (classification according to ASA);</li><li>Anaesthesiology apparatus practice-surgery</li><li>Regional anesthesia-practice</li><li>Phantom practice-artificial respiration, heart massage</li><li>Medicaments application, practice (im, iv and infusion therapy)</li><li>Practice in intensive care unit-critical patient, reanimation of patient with shock, patient intubing-practice on a model</li><li>Practical use of defibrillator</li><li>Blood transfusion</li></ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching, seminars, practical trainings		
15.	<b>Total available time frame</b>	60 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	20 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	Practical course: 18 hours Seminars: 2 hours
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	20 hours
18.	<b>Requirements for signature</b>	The student is obliged to participate actively in all anticipated activities including continuous assessment in order to gain a signature.		
19.	<b>Methods of assessment</b>			
	19.1.	Tests: points	1 Continual assessment - written test: Anaesthesiology, reanimation patient's shock and therapy	

		min – max <b>points 21-35</b>														
<b>19.2.</b>	Seminar paper/project, written and oral presentation: points	Seminar paper/written presentation maximum <b>4 points</b>														
<b>19.3.</b>	Final exam: points	<b>Final exam: practical + oral examination</b> Practical examination: (according to skills catalogue) + integrative oral part – the integrative knowledge necessary to understand the core of the subject is examined min – max <b>24-40 points</b> <ul style="list-style-type: none"><li>• 10=38-40 points</li><li>• 9=35-37 points</li><li>• 8=31-34 points</li><li>• 7=28-30 points</li><li>• 6=24-27 points</li></ul> <p>The student has to gain minimum 49% of the anticipated points for each part of the exam in order to obtain the points for the final exam. On the contrary, the exam is considered not passed.</p> <p><b>Complete final exam:</b> is a combination of the failed colloquies and final exam.</p> <p>To obtain the right to a final exam, the student is obliged to pass the failed continual assesment first, and then to pass the final exam.</p> <p>In case student does not pass the failed exam, he does not have right to take the final exam.</p> <p>Points for the activities of the student:</p> <table><tr><td>Type of activity</td><td>points min – max</td></tr><tr><td>Theoretical course</td><td>1-5</td></tr><tr><td>Seminars</td><td>2-4</td></tr><tr><td>Practical course</td><td>12-16</td></tr><tr><td>Continual assesment</td><td>21-35</td></tr><tr><td>Final exam – oral</td><td>24-40</td></tr><tr><td>Total</td><td>60-100</td></tr></table> <p>Theoretical course presence: 51%-60% -1 point 61%-70% - 2 points</p>	Type of activity	points min – max	Theoretical course	1-5	Seminars	2-4	Practical course	12-16	Continual assesment	21-35	Final exam – oral	24-40	Total	60-100
Type of activity	points min – max															
Theoretical course	1-5															
Seminars	2-4															
Practical course	12-16															
Continual assesment	21-35															
Final exam – oral	24-40															
Total	60-100															

			71%-80% -3 points 81%-90% - 4 points 91%-100% - 5 points  The grade for the whole exam is obtained by counting the points obtained from all the anticipated activities (lectures, practice, seminars, colloquies, final exams)			
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Anonymous evaluation by the students of the subject, the teachers and the collaborators who participate in the education			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Morgan E, Mikail M, Marej M	Clinical Anesthesiology	Chicago: McGraw Hill	2013
	22.2	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Soljakova M. et al.	Anesthesiology and reanimation	Skopje: Biographica	2007

Number:48

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>EMERGENCY MEDICINE</b>			
2.	<b>Code</b>	MED 514			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Surgery			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6 - year studies			
6.	<b>Academic year/semester</b>	Year	Fifth ( V )	Semester	Ninth (IX)
7.	<b>ECTS credits</b>	1.5 credits			
8.	<b>Professor (when more professors,</b>	Assosiate Prof. Oliver Stankov PhD, MD - responsible professor			



	<b>responsible professor is assigned)</b>	*Lectures held by the professors from the Department of Surgery, Department of Internal Medicine, Department of Pediatrics, Department of Neurology, Department of Otorhinolaryngology, Department of Ophtalmology
9.	<b>Language of the study</b>	English
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: filled condition for VII semester. The student is obliged to gain a minimum score of planned activities, including the continued examination in order to access the final exam. If the student did not win the required minimum score, they can access on the final exam in one of the three exam sessions
11.	<b>Subject program goals (competences) and study results:</b>	The students to learn the basis of recognition of emergency conditions in medicine To learn the principles of caring in urgent situations and to overcome the skills in necessary therapis procedures, within their professional work. To know how to apply algorithms for reanimation issued by AHA (American Heart Association) and ERC (European Resuscitation Council).
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Urgent conditions in Cardiology</li> <li>• Urgent conditions in Pulmonology</li> <li>• Urgent conditions in GIT</li> <li>• Urgent conditions in Toxicology</li> <li>• Urgent conditions in Nephrology</li> <li>• Urgent conditions in Pediatrics</li> <li>• Urgent surgery conditions</li> <li>• Urgent gynecology conditions</li> <li>• Urgent conditions in Ophtalmology,</li> <li>• Urgent conditions in ORL</li> <li>• Urgent conditions in neurology</li> <li>• Urgent conditions in dermatovenerology</li> </ul> <p><b>Seminar (4 classes)</b></p> <ul style="list-style-type: none"> <li>• Cardiology (2 hours)</li> <li>• Nephrology (1 hours)</li> <li>• Surgery (1 hours)</li> </ul> <p><b>Practical course (12 hours):</b></p> <ul style="list-style-type: none"> <li>• The practical course is mandatory and it is carried out in different departmants of intensive treatment uder leadership od mentor professor.</li> <li>• The student is obliged to participate in all activities of caring and treatment on intensive treatment.</li> </ul>
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program
14.	<b>Description of the subject's study and working</b>	Interactive lectures, tutorials and seminars

	methods in details					
15.	Total available time frame		45 classes			
16.	Forms of teaching activities		16.1.	Lessons – theoretical lessons, hours		12
			16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours		12
			16.3.	Practice: hours		6
17.	Other forms of activities		17.1.	Project tasks: hours		
			17.2.	Individual tasks: hours		
			17.3.	Studying at home: hours		15
18.	Requirements for signature		To get a signature the student is required to attend the theoretical, practical training and seminars and to gain minimum scores			
19.	Methods of assessment					
	19.1.	Tests: points			Continual assesment - written test Theoretical basics of all areas of emergency medicine  min – max points 25 - 45	
	19.2.	Seminar paper/project, written and oral presentation: points			Seminar 25 points	
	19.3.	Final exam: points			10-30 points The assessment of the subject is formed according to the table of estimates, based on the sum of points from all activities, continuous inspections and final examination.	
20.	Grading criteria (points/grade)			From 60 to 68 points		6 (six) (E)
				From 69 to 76 points		7 (seven) (D)
				From 77 to 84 points		8 (eight) (C)
				From 85 to 92 points		9 (nine) (B)
				From 93 to 100 points		10 (ten) (A)
				From 60 to 68 points		6 (six) (E)
21.	Methods of monitoring the quality of the teaching process			Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities		
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Schaider J, Hayden SR, Wolfe R, Barkin RM, Rosen P	Rosen & Barkin's 5-Minute Emergency Medicine Consult	Philadelphia: LWW	2019

		2.	Tintinalli JE, et. al.	Tintinalli's Emergency Medicine	Chicago: Mc Graw Hill	2023
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Teaching materials on English for students prepared by the faculty			

Number:49

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>PHYSICAL MEDICINE AND REHABILITATION</b>			
2.	<b>Code</b>	MED 515			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Physical Medicine and Rehabilitation			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Ninth (IX)
7.	<b>ECTS credits</b>	1			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Erieta Nikolikj Dimitrova, PhD, MD - responsible professor *Lectures held by the professors from the Department of Physical Medicine and Rehabilitation			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Requirement for the VII semester fulfilled. In order to take the final exam, the student should obtain the minimum points from the continual assessments.			
11.	<b>Subject program goals (competences) and study results:</b>	<b>Teaching goals:</b> <ul style="list-style-type: none"> <li>To acquire knowledge for fundamentals of physical therapy</li> <li>To acquire knowledge for physiological and therapeutic effects of some physical modalities</li> <li>To understand positive effects of kinesitherapy (exercise therapy) and occupational therapy</li> <li>To acquire knowledge for orthopaedic devices and their use in rehabilitation</li> <li>To acquire rehabilitation procedures for rehabilitation of patients with rheumatologic, neurologic, orthopaedic disorders, child diseases, posttraumatic conditions, rehabilitation of cardiovascular and pulmonary diseases</li> <li>To know indications and contraindications for physical therapy and rehabilitation</li> </ul>			

		<ul style="list-style-type: none"> <li>To acquire knowledge for multidisciplinary approach in rehabilitation</li> <li>To become qualified for education of patients about their need for physical therapy and rehabilitation treatment</li> </ul>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>Introduction to physical medicine and rehabilitation</li> <li>Patient's examination</li> <li>Heat therapy</li> <li>Light therapy</li> <li>Hydrotherapy</li> <li>Balneotherapy</li> <li>Fundamentals of electrotherapy</li> <li>Manual therapy- massage, and spinal traction</li> <li>Fundamentals of exercise therapy</li> <li>Occupational therapy</li> <li>Orthopaedic devices</li> <li>Rehabilitation of patients with rheumatologic diseases</li> <li>Rehabilitation of patients with neurologic diseases</li> <li>Rehabilitation of patients with orthopaedic diseases and posttraumatic conditions</li> <li>Rehabilitation of diseases in childhood</li> <li>Rehabilitation of patients with cardiology and pulmonary diseases</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>Introduction to different therapeutic rehabilitation programs</li> <li>Training for application of some methods of physical therapy in a variety of injuries and illnesses (infra –red rays, ultraviolet rays, ice therapy)</li> </ul>
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program.
14.	<b>Description of the subject's study and working methods in details</b>	<ul style="list-style-type: none"> <li>Interactive teaching during lectures and practical trainings,</li> <li>Classes of practical instruction,</li> <li>Case reports</li> <li>Independent study by using textbooks.</li> </ul>
15.	<b>Total available time frame</b>	30 classes 15 classes - theoretical course, practical course 15 classes - home individual learning
16.	<b>Forms of teaching activities</b>	16.1. Theoretical course 7 classes
		16.2. Practical course (laboratory, therapeutic ward, case reports in hospital), team work: hours 8 classes
		16.3. Practice: hours /
17.	<b>Other forms of activities</b>	17.1. Project tasks: hours /
		17.2. Individual tasks: hours /
		17.3. Individual (home) learning: hours 15
18.	<b>Requirements for signature</b>	In order to get a signature, the student should obtain minimum points in both theoretical and practical courses. The grade in the final exam is given according to the grading table, and on

		the basis of the sum of points obtained in all of the activities.				
19.	<b>Methods of assessment</b>					
	19.1.	Tests: points			Continual assessment - 1 (written) 54-90 points	
	19.2.	Seminar paper/project, written and oral presentation: points			/	
	19.3.	Final exam: points          Active participation on the theoretical and practical classes			Final exam: final test Final test is written 54-90 points  min – max  Theoretical course: 1-3 points Practical course: 5- 7 points  The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.	
20.	<b>Grading criteria (points/grade)</b>			Up to 59 points	5 (five) (F)	
				From 60 to 68 points	6 (six) (E)	
				From 69 to 76 points	7 (seven) (D)	
				From 77 to 84 points	8 (eight) (C)	
				From 85 to 92 points	9 (nine) (B)	
				From 93 to 100 points	10 (ten) (A)	
21.	<b>Methods of monitoring the quality of the teaching process</b>			Student’s anonymous evaluation of the subject and teaching stuff who are involved in the education.		
22.	<b>Literature</b>					
	22.1.	<b>Mandatory literature</b>				
		Number	Author	Title	Publisher	Year
		1.	Braddom R.	Physical Medicine and Rehabilitation.	New York: Elsevier	2011
		2.	De Lisa J.	DeLisas` Physical Medicine and Rehabilitation. Principles and Practice	Philadelphia: LWW	2011
		22.2.	<b>Additional literature</b>			

		Number	Author	Title	Publisher	year
		1.	Nikolij-Dimitrova E.	Physical medicine and rehabilitation	Skopje: Laserjet,	2011
		2.	Teaching materials on English for students prepared by the Department			

Number:50

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	PSYCHIATRY			
2.	Code	MED 521			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Psychiatry and Medical Psychology			
5.	Degree of education (first, second, third cycle)	Integrated 6-year study			
6.	Academic year/semester	Year	Fifth (V)	Semester	Tenth (X)
7.	ECTS credits	5,5			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Slavica Arsova Hadji-Angjelkovska, PhD, MD - responsible professor *Lectures held by professors from the Department			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Fulfilled preconditions for VII semester. For taking the final exam the student has to pass the test and to acquire minimum of the intended points.			
11.	Subject program goals (competences) and study results:	<ul style="list-style-type: none"> <li>• Preparation of students to work with psychiatric patients</li> <li>• Diagnosis and treatment of psychiatric patients</li> <li>• Adoption of theoretical and practical knowledge in psychiatry (contact and communication with psychiatric patients, interviewing patients, differential diagnosis, treatment planning).</li> </ul>			
12.	Subject content in details by chapters and units, with study results for every chapter	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• General psychopathology (disorders of psychological functions of consciousness, sensations and perceptions, emotions and affects, attention, thought process, delusions/illusions/hallucination, memory function, will and drives, cognitive functioning);</li> <li>• Developmental stages and developmental disorders (speech and language disorders, learning disorders, pervasive disorders, mixed developmental disorders, attention deficit hyperactivity disorder)</li> <li>• Intellectual disability</li> <li>• Personality disorders</li> <li>• Anxiety disorders and stress disorders (Generalized anxiety disorder, Dissociative disorder, Somatoform</li> </ul>			

		<p>disorder, Phobic disorder, Obsessive – compulsive disorder, posttraumatic stress disorder)</p> <ul style="list-style-type: none"> <li>• Psychosis (Schizophrenia spectrum, clinical presentation, differential diagnosis and treatment)</li> <li>• Affective spectrum (Recurrent depressive disorder, bipolar disorder – clinical presentation, differential diagnosis and treatment)</li> <li>• Persistent delusional disorders</li> <li>• Organic brain syndromes (acute brain disorders, chronic brain disorders)</li> <li>• Eating disorders</li> <li>• Substance use disorders, behavior dependences, problematic use of internet, comorbidity and dual disorders</li> <li>• Treatment approach in psychiatry - psychotherapy, psychotherapeutic approaches and techniques, psycho-pharmacotherapy</li> </ul> <p><b>Practical course:</b>  <b>Communication with psychiatric patients</b> (taking medical history, psychiatric status, Identification of the leading symptoms, psychological evaluation, Differential diagnosing, <b>Treatment approaches in:</b></p> <ul style="list-style-type: none"> <li>• Disorders in childhood and adolescence</li> <li>• Anxiety disorders</li> <li>• Psychotic disorders</li> <li>• Disorders in involute period</li> <li>• Substance use / behavior dependence disorders</li> <li>• Diagnostic methods in psychiatry (Psychological exploration, Neuro-imaging techniques, EEG)</li> <li>• Treatment approaches in psychiatry (psychotherapy and pharmacotherapy)</li> </ul>		
	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching during lectures and practical trainings, seminars		
15.	<b>Total available time frame</b>	165 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	42
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	53
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	70
18.	<b>Requirements for signature</b>	<b>Conditional criteria for assessment of knowledge:</b>		

		For obtaining a signature the student is required to attend the theoretical and practical lectures.  Theoretical course min.-max. points 1-3 Practical course points 5-7				
19.	Methods of assessment					
	19.1.	Tests: points	Continual assesment min.-max. total 18 - 30 points			
	19.2.	Seminar paper/project, written and oral presentation: points				
	19.3.	Final exam: points	For taking the final exam the student has to pass the test and to acquire minimum 51% (16 points) of the total number of points (30 points) from the tests. After passing the test the student takes the oral and practical exam. The grade is a sum of all points acquired from the activities and parts of the exam according to the table of grades.  Practical exam min.-max. 12-20 points Oral exam 24-40 points			
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation for the subject, teachers and associates participating in the teaching.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Sadock B., Sadock V.	Kaplan and Sadock's Comprehensive Textbook of Psychiatry (2 Volume Set) 10th Edition	Philadelphia: Lippincott Williams and Wilkins	2017
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
1.		Chadlovski G. and al.	Psychiatry, part I and part II	Skopje: Prosvetno delo	2004	



		2.	Chadlovski Filipovska A. Belevska D.	Medical psychology	Skopje: Prosvetno delo	2004
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Number:51

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	<b>OTORHINOLARYNGOLOGY</b>			
2.	Code	MED 522			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Otorhinolaryngology			
5.	Degree of education (first, second, third cycle)	Integrated 6 – years studies			
6.	Academic year/semester	Year	Fifth (V)	Semester	Tenth ( X)
7.	ECTS credits	6			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Jane Netkovski, PhD, MD - responsible professor *Lectures held by the professors from the Department of Otorhinolaryngology			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: Completed course of VII semester In order to take the final exam, the student should obtain the minimum points from the continual assessments.			
11.	Subject program goals (competences) and study results:	- Student should learn the main symptoms and signs of certain pathological conditions in otorhinolaryngology - To perform the basic investigations in this area.			
12.	Subject content in details by chapters and units, with study results for every chapter	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>Clinical anatomy and physiology of the ear, congenital malformations of the external, middle and inner ear, noninflammatory, inflammatory diseases of external ear, acute and</li> </ul>			

		<p>chronic middle ear diseases, otogenic complication of otitis, injuries of the middle ear, bone diseases of the middle ear, general aspects of cochlear and retrocochlear hearing loss, treatment of pediatric hearing disorders, vestibular disorders, tumors of the ear, tumors of the cerebellopontine angle, sudden sensorineural hearing loss, temporal bone fractures, diagnosis and management of facial paralysis, auditory rehabilitation</p> <ul style="list-style-type: none"> <li>• Clinical anatomy immunology and physiology of the nose and paranasal sinuses. morphology of the nasal mucosa, nasal deformities, inflammation of external nose, nasal cavity and facial soft tissues, sinus inflammation, nasal polyposis, rhinosinusogenic complications, tumors of the nasal cavity and the nose and paranasal sinuses.</li> <li>• Anatomy, physiology and immunology of the pharynx, diseases of the nasopharynx, oropharynx, peripheral obstructive sleep apnea syndrome, tumors, diseases of the hypopharynx and esophagus.</li> <li>• Anatomy of the external neck, malformation, inflammation and tumors of the neck, clinical anatomy of the larynx and trachea, malformation of the larynx and trachea, infectious diseases of the larynx and trachea in adults and children, chronic nonspecific laryngitis, foreign-body aspiration and injuries of the larynx and trachea, tumors of the larynx and trachea, airway management, neurogenic disorders of the larynx, clinical aspects of the voice disorders, speech and language disorders.</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>• Examination of the ear (inspection and otoscopy), clinical hearing tests, basic principles of audiometry, nystagmus classification and tests,</li> <li>• History and clinical examination of the nose, nasal endoscopy, special rhinologic tests, imaging of the nose and paranasal sinuses.</li> <li>• Methods of examining the pharynx,</li> <li>• Symptomatology and examination of larynx (inspection, palpation indirect and direct laryngoscopy) and trachea, imaging of the larynx and trachea,</li> </ul>
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program.
14.	<b>Description of the subject's study and working methods in details</b>	Interactive lectures, group work, exercises, seminar paper
15.	<b>Total available time frame</b>	180 hours

16.	Forms of teaching activities	16.1.	Lectures – theoretical course	37 hours		
		16.2.	Practical lessons (laboratory, clinical), seminars, team work: hours	45 hours		
		16.3.	Seminars	15		
17.	Other forms of activities	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours	83		
18.	Requirements for signature	In order to get a signature, the student should obtain minimum points in both theoretical and practical courses				
19.	Methods of assessment					
	19.1.	Tests: 1. Otology and audiology 2. Nose, paranasal sinuses & pharyngo-laryngology	min - max. points 12 – 23 points 12 - 23			
	19.2.	Seminar paper/project, written and oral presentation:	points 1 - 3			
	19.3.	Final exam:  - Practical exam - Oral exam	min – max  points 10 - 16 points 25 – 35			
20.	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process	Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Probst R, Grevers G, Iro H	Basic otorhinolaryngology	New York: Thieme	2006
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Lee KJ.	Essential otolaryngology head and neck surgery	New York: Thieme	2012

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>OPHTHALMOLOGY</b>			
<b>2.</b>	<b>Code</b>	<b>MED 523</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Ophthalmology			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Tenth (X)
<b>7.</b>	<b>ECTS credits</b>	4			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Assoc. Prof. Emilija Gjoshevska Dashtevska MD, PhD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10..</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Fulfilled criteria for assessing VII semester. In order to take the final exam, the student should obtain the minimum points from the continual assessments.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• Student's ability for learning basic pathological signs to recognize and differentiate most common ophthalmological diseases.</li> <li>• Embracing knowledge for performing fundamental skills and general investigations for setting proper diagnosis of certain ophthalmological diseases</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<ul style="list-style-type: none"> <li>• Pathology of orbit and refractions</li> <li>• Diseases of eyelids, conjunctiva and lacrimal system</li> <li>• Diseases of anterior segment – cornea, iris and lens</li> <li>• Classification, clinical course, diagnosis and treatment of primary and secondary glaucoma</li> <li>• Diseases of posterior segment – vitreous body, optic nerve, choroid and retina</li> <li>• Strabismus, nystagmus, amblyopic conditions</li> </ul>			
<b>13.</b>	<b>Interconnection between subjects</b>	Related to all subjects in the study program			

14.	Description of the subject's study and working methods in details	Interactive lectures, seminar presentations, exercises, workshop				
15.	Total available time frame	120 hours				
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours		33	
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours		Practical – 34	
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours		60 hours	
18	Requirements for signature	In order to get a signature for the course, students are obliged to visit practical and theoretical lectures with active participation				
19.	Methods of assessment					
	19.1.	Tests: points		min-max Continual assessments: 1. General ophthalmology 11.5-19 points  2. Special ophthalmology 11.5-19 points  Total number 23 - 38 points		
	19.2.	Seminar paper/project, written and oral presentation: points		min-max Seminar works 6-10 points		
	19.3.	Final exam: points		min-max Practical exam 6-11 points Oral exam 25-41 points		
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process					
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year

		1.	Bredford AC	Basic Ophthalmology	San Francisco: American Academy of Ophthalmology	2004
		2.	Carlson NB, Kurtz D	Clinical procedures in ophthalmologic examination	Chicago: McGraw-Hill Education	2015
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Waring GO, et al.	<b>Basic and Clinical Science Course, Section 13: Refractive Surgery</b>	San Francisco: American Academy of Ophthalmology	2022-2023
		2.	Kanski JJ.	Clinical Ophthalmology	New York: Elsevier	2020
		3.	Janev K. Zecevik S	General ophthalmology	Skopje: Menora	2012

Number:53

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	FAMILY MEDICINE			
2.	Code	MED 524			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Family Medicine			
5.	Degree of education (first, second, third cycle)	Integrated 6-years studies			
6.	Academic year/semester	Year	Fifth (V)	Semester	Tenth (X)
7	ECTS credits	1.5			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Katarina Stavrikj PhD, MD - responsible professor *Lectures held by the professors from the Department of Family Medicine, Department of Neurology			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: completed exams for enrollment in VII semester. In order to take the final exam, the student is required to attend the theoretical, practical training and admit seminar, and to pass the continual assessment.			
11.	Subject program goals (competences) and study results:	The goal is that the student learns the basics of the family medicine, to recognize the importance of family medicine for the health of the population. The students will acquire competences in primary care management, person oriented health care, specific			

		<p>problem solving skills and holistic approach.</p> <ul style="list-style-type: none"> <li>• To achieve knowledge, skills and attitude for effective patient orientated care and treatment: prevention, recognize and treatment of most common acute and chronic diseases and mental health.</li> <li>• To achieve communication and consultation skills in family doctor practice.</li> <li>• To achieve skills for effective response to different complains and problems of patients, to support them to manage and to make prioritization of problems</li> <li>• To understand the possibilities and limitations in the community for medical care</li> <li>• To achieve knowledge and skills to use bio-psycho-social model for patient treatment and care</li> <li>• To be aware for ethical and moral responsibility of family doctor about creating health policy in the community</li> </ul>
12.	<p><b>Subject content in details by chapters and units, with study results for every chapter</b></p>	<p><b>Theoretical course:</b> Interactive participation of students with analyses and discussion of cases and theoretical lecture of the responsible teacher.</p> <ol style="list-style-type: none"> <li>1. Introduction to FM/GP as a specific medical discipline. Principles of Family Medicine: Continuity, comprehensiveness, coordination of care.</li> <li>2. Communication skills.</li> <li>3. Use of evidence based medicine and guidelines for most common presenting symptoms in family medicine.</li> <li>4. Management of diseases at early, undifferentiated stage. Dealing with uncertainty.</li> <li>5. Holistic approach. Bio-psycho-social model.</li> <li>6. Management of multiple health problems, identifying priorities.</li> <li>7. Prevention and health promotion, patient education.</li> <li>8. Decision making based on prevalence and incidence of target.</li> <li>9. Consulting skills — stages of a consultation.</li> <li>10. Patient-centeredness – complex patient.</li> <li>11. Chronic care, management of chronic diseases and health problems</li> <li>12. Interface of primary and secondary care: Referrals, gate keeping, advocacy</li> <li>13. The family as a source of disease and resource of care.</li> <li>14. Community orientation.</li> </ol> <p><b>Practical course:</b> The practical work will be organized in the Center for family medicine through workshops - patient with chest pain, rational prescribing of antibiotics for acute respiratory tract infection, patient</p>

		<p>with hypertension, patient with diabetes mellitus, patient with cough and patient with metabolic syndrome.</p> <p>During the workshops the student can:</p> <ul style="list-style-type: none"> <li>• Collects all important clinical information</li> <li>• Is able to integrate collected information</li> <li>• Gives a correct working diagnosis</li> <li>• Orders appropriate diagnostic tests</li> <li>• Can choose an appropriate treatment method</li> </ul> <p>The student can demonstrate following clinical skills:</p> <ul style="list-style-type: none"> <li>• Blood pressure measurement</li> <li>• Calculate and interpret BMI</li> <li>• Use of glucometar</li> <li>• Use of pick flow meter</li> <li>• Clinical examination of breast</li> <li>• Taking and interpreting rapid strep test</li> </ul> <p><b>Seminar work:</b> Each student has the task under the supervision of a teacher to prepare a seminar essay on the topic of family medicine with a maximum of 5 pages. Seminar work is submitted in electronic form in the Family Medicine Center by the end of completion of family medicine. Assessed: understanding the problem, explains the findings and give possible solutions of the problem, and use of appropriate literature.</p>		
13.	<b>Interconnection between subjects</b>	<p>Related to all subjects in the study program. Passed exam is obligated for Family Medicine Clinical Practice</p>		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive presentation, discussion of cases, practical work in GP's practice, clinical skills practicing		
15.	<b>Total available time frame</b>	45		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	14
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	16
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18.	<b>Requirements for signature</b>	<p>To obtain the signature, student is required to attend the theoretical, practical training and admit seminar and to gain a minimum score for all parts.</p> <p>After that the student has to pass the continual assesment and oral exam.</p>		



		The final mark is formed according to the table of marks, based on the sum of points from all activities, continuous checks and final exam.				
19.	<b>Methods of assessment</b>					
	19.1.	Tests: points			18-30	
	19.2.	Seminar paper/project, written and oral presentation: points			5-12	
	19.3.	Final exam: points min-max			60-100	
		Written part 18-30				
Oral part 20-30						
Seminar essay 5-12						
Attendance Theoretical part 5-10						
Attendance Practical part 12-18						
20.	<b>Grading criteria (points/grade)</b>			Up to 59 points	5 (five) (F)	
				From 60 to 68 points	6 (six) (E)	
				From 69 to 76 points	7 (seven) (D)	
				From 77 to 84 points	8 (eight) (C)	
				From 85 to 92 points	9 (nine) (B)	
				From 93 to 100 points	10 (ten) (A)	
21.	<b>Methods of monitoring the quality of the teaching process</b>			Students' anonymous evaluation of the subject and medical staff included in the teaching process.		
22.	<b>Literature</b>					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Rachel R.	Textbook of family medicine	Philadelphia: Saunders	2015
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Stavrikj K, Petrovski G, Nikolovska S, Kiteva Trenceva G, Gerasimovska B, Stojanovski Z	Family medicine (on line available)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Family Medicine	2013

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	FORENSIC MEDICINE			
2.	Code	MED 525			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Medical Faculty, Department of Forensic Medicine			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Fifth (V)	Semester	Tenth (X)
7	ECTS credits	4			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Zlatko Jakjovski, PhD, MD - responsible professor *Lectures held by the professors from the Department of Forensic Medicine			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Filled out condition for enrollment in the VII semester In order to access the final exam student should pass the predicted continuous check or to win at least 30% of the total number of points on the preliminary exam. In the exam session, the student should first pass the preliminary exam and then approach the final exam.			
11.	Subject program goals (competences) and study results:	<ul style="list-style-type: none"> <li>Adoption and mastering of skills for determination of death, signs of death, cause of death and issuing a certificate of death.</li> <li>Gaining knowledge of indications for forensic autopsy, and differentiating violent from natural death.</li> <li>Mastering skills of description of mechanical injuries, chemical injuries, injuries due to heat, injuries due to cold, electrocution, lightening, asphyctic injuries and nutritive injuries.</li> <li>Mastering skills of filling out and issuing a medical certificate.</li> <li>Gaining knowledge of criminal law provisions concerning the medical profession (negligent treatment, professional secrecy, euthanasia, failure to provide medical assistance).</li> </ul>			
12.	Subject content in details by chapters and units, with study results for every chapter	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>Thanatology. Agony, dying, death, and types of death. Signs of death – uncertain signs, early post-mortem signs, and certain or later post-mortem signs. Estimation of time since death. Determination of death and cause of death.</li> <li>Mechanical injuries, general characteristics. Blunt-force trauma, sharp-force trauma (stab wounds, incised wounds), and gunshot wounds.</li> <li>Asphyctic injuries, mechanism, and general characteristics. Strangulation, suffocation, and compression.</li> <li>Injuries due to heat, injuries due to cold, injuries due to electrocution, injuries due to lightening, injuries due to microwave, laser, and atomic radiation</li> </ul>			

		<ul style="list-style-type: none"><li>• Chemical injuries, poisons. Poisoning with corrosives, poisoning with metals, medicamentous poisoning, poisoning with pesticides, alcohol poisoning, and drugs</li><li>• Nutritive injuries</li><li>• Identification of living, and of deceased. DNA identification.</li><li>• Violent death - murder, suicide, and accident</li><li>• Forensic gynecology, and sexology</li><li>• Medico-legal expertise, and medico-legal expert. Medico-legal expertise of injuries.</li><li>• Medico-legal comment on the provisions of the criminal law for negligence, negligent treatment, failure to provide medical assistance, quackery, professional secrecy</li></ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"><li>• Medico-legal autopsy. Performing technique of medico-legal autopsy. Goals and indications for medico-legal autopsy.</li><li>• Medical certificate</li><li>• Examination of victims of sexual abuse</li><li>• Identification of living and deceased</li><li>• Determination of death and issuing of certificate of death</li><li>• Medical criminalistics, expertise of blood stains, fiber and hair, sperm</li><li>• Forensic DNA technology</li></ul> <p><b>Seminar papers:</b> Students themselves choose matter in the field of forensic medicine</p>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program.		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching, practical course and seminar papers -theoretical course, practical course, and seminars		
15.	<b>Total available time frame</b>	120 classes, 75 hours lectures 45 hours home studying		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	50 classes
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	25 classes
		16.3.	Practice: hours	/
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	/
		17.2.	Individual tasks: hours	/
		17.3.	Studying at home: hours	45 classes
18.	<b>Requirements for signature</b>	The student is required to actively follow all of the planned activities. <b>Conditional criteria for continual assesment:</b> To get a signature, the student should attend theoretical classes, practical course and seminars and gain a minimum score. Theoretical course                      points                      1 – 3 Practical course                      points                      3 – 5 Attendance at theoretical course		

		51% - 60% = 1 point 61% - 91% = 2 points 91% - 100% = 3 points				
19.	Methods of assessment					
	19.1.	Tests: points			Continual evaluation * min. 12 – max. 20 * preliminary exam - one written exam	
	19.2.	Seminar paper/project, written and oral presentation: points			min – max 0 - 2	
	19.3.	Final exam: points			Oral exam* min. 32 – max. 50 Practical exam* min. 12 – max. 20 * Oral exam (integrative) – 3 questions to evaluate the integrative knowledge important for understanding the entirety of the subject and the medical practice * Practical exam (according to the skills) – 2 questions from the practical course and skills of writing Latin diagnosis.  The final grade is formed according to the table of grades based on the sum of points from all activities, continuous checks, preliminary exam and final exam	
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Student`s anonymous evaluation of the subject, teachers and associates involved in the educational process.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year

		1.	DiMaio VJM, Molina K.	Forensic Pathology	Boca Raton: CRC Press	2021
	22.2.	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Tasić M et al.	Forensic medicine	Novi Sad: Zmaj	2006
		2.	Zečević D, et al.	Forensic medicine	Zagreb: Medicinska naklada	2004
		3.	Janeska B, et al.	Practicum in forensic medicine	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Forensic Medicine Skopje	2019

Number:55

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>				
1.	<b>Subject</b>	<b>OCCUPATIONAL MEDICINE</b>				
2.	<b>Code</b>	MED 526				
3.	<b>Study program</b>	General Medicine				
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Occupational Medicine				
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies				
6.	<b>Academic year/semester</b>	Year		Fifth (V)	Semester	Tenth (X)
7.	<b>ECTS credits</b>	2				
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Jordan Minov, PhD, MD - responsible professor *Lectures held by the professors from the Department of Occupational Medicine				
9.	<b>Language of the study</b>	English				
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: completed criteria for the seventh (VII) semester. In order to take the final exam, the student should obtain the minimum points from the continual assessment.				

		<div> <div>Theoretical course</div> <div>Practical course</div> </div> <div> min.-max. points 5-8 points 8-12 </div>		
11.	<b>Subject program goals (competences) and study results:</b>	Adoption of the knowledge, skills, and basic principles in occupational medicine, principles, and practice of health and working environment		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Physiology and psychology of work;</li> <li>• Ergonomics, Ecology of work and working environment's surveillance</li> <li>• Physical hazards in working environment and health's effects;</li> <li>• Chemical hazards in working environment and health's effects;</li> <li>• Psychosocial factors at work and health's effects;</li> <li>• Biological hazards in working environment and health's effects</li> <li>• Occupational diseases, work-related diseases and impairments of selected organs and systems</li> <li>• Preventive measures, Preventive strategy</li> </ul> <b>Practical course:</b> <ul style="list-style-type: none"> <li>• Microclimate in working environment; workplace analysis;</li> <li>• Noise in working environment and hearing assessment;</li> <li>• Ionizing radiation, personal dosimeters, safety measures;</li> <li>• Lighting in working environment and sight assessment;</li> <li>• Air pollution in working environment;</li> <li>• Functional capacity assessment: cardio-respiratory system, anthropometry;</li> <li>• Preventive medical examinations;</li> <li>• Occupational diseases (case reports)</li> <li>• Work-related-diseases (case reports)</li> <li>• Pneumoconiosis and RTG classification-interpretation;</li> <li>• Methods and procedures in work ability assessment-practical work;</li> <li>• Specific occupational risks in exposed workers in different sectors and industries</li> <li>• Workers' Preparedness and Response to disasters</li> <li>• Analysis of research data and scientific publications in the field of occupational medicine</li> </ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program. Passed exam is obligated for Public Health - Clinical Practice		
14.	<b>Description of the subject's study and working methods in details</b>	Lectures with interactive approach; Practical work, Seminars, Poster preparation and presentation		
15.	<b>Total available time frame</b>	60 hours		
16.		16.1.	Lessons – theoretical lessons, hours	29 hours

	<b>Forms of teaching activities</b>	16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	Practical work: 14 hours Seminars: 2 hours
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 hours
18.	<b>Requirements for signature</b>	Conditional criteria: In order to obtain a signature, the student is required to attend theoretical, practical courses and seminars and to score minimum points. The student can take the final exam if he/she has passed the continuous tests with minimum points. Additionally, he/she has to pass the continuous assessments, and then can take the complete final exam. The grade for the subject is formed according to the rating table, based on the sum of the points from all the activities, the continuous testing and the final exam.		
19.	<b>Methods of assessment</b>			
	19.1.	Tests: points	Continual assesments  Continual assessments: 1 written test points 15-25 Physiology and psychology of work, Ergonomics, Workplace risk assessment and ecological monitoring, Occupational diseases, work-related diseases and injuries at work, Physical factors of working environment  <b>Final exam</b> min. - max. points <b>Written exam*</b> 12-20  <b>Oral exam**</b> 18-30  * Written exam - Chemical factors of working environment and health's effects, occupational toxicology, metals, gases, pesticides, organic compounds ** Oral exam (integrative) including physical, chemical, biological, and psychosocial workplace hazards, occupational diseases, and impairments of selected organs and systems, preventive measures  The student is obliged to have a minimum of predicted points for each part of the exam in particular, in order to enable them to be inscribed as points for the final exam. Otherwise, the exam is considered unsuccessful.	
	19.2.	Seminar paper/project, written and oral presentation: points	Project activity (part of practical work) min. - max. points 2-5	
	19.3.	Final exam: points	min. - max. points 51-100	

20.	Grading criteria (points/grade)	Up to 59 points			5 (five) (F)	
		From 60 to 68 points			6 (six) (E)	
		From 69 to 76 points			7 (seven) (D)	
		From 77 to 84 points			8 (eight) (C)	
		From 85 to 92 points			9 (nine) (B)	
		From 93 to 100 points			10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process	Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities.				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Wallace RB(ed.)	Public Health and Preventive Medicine	Denver-New Orleans: OEM Press Publication	2008
		2.	Robert J. Gatchel, Izabela Z. Schultz	Handbook of Occupational Health and Wellness	Boston: Imprint: Springer, Harvard University	2012
		3.	Rom WN.	Environmental and occupational medicine	Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins	2007
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Stikova E.	Occupational Medicine	University Ss. Cyril and Methodius in Skopje, Faculty of Medicine	2012
		2.	Bislimovska Karadzinska J, Minov J, Risteska-Kuc S, Mijakoski D, Stoleski S	Occupational Medicine	University Ss. Cyril and Methodius in Skopje	2011

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
<b>1.</b>	<b>Subject</b>	<b>SOCIAL MEDICINE AND HEALTH ECONOMICS</b>



2.	<b>Code</b>	MED 527			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	University Ss. Cyril and Methodius in Skopje, Faculty of Medicine, Department of Social Medicine			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-years studies			
6.	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Tenth (X)
7.	<b>ECTS credits</b>	2			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Mome Spasovski MD, PhD - responsible professor *Lectures held by the professors from the Department of Social Medicine			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: requirement met for the VII <sup>th</sup> semester. To access to the final exam the student should pass the predicted continuous assessment and to achieve at least 60% of the total number of points for continuous assessment, whereby in the exam session first takes the unpassed continuous checks, then comes to the final exam.			
11.	<b>Subject program goals (competences) and study results:</b>	Teaching goals of this subject are to improve the knowledge of the student and to become familiar with: <ul style="list-style-type: none"> <li>• The basic principles of social medicine</li> <li>• Organization and evaluation of the health systems</li> <li>• Health management</li> <li>• Health economics</li> <li>• Quality of health care</li> <li>• Health promotion and disease prevention</li> <li>• Health care of vulnerable groups of the population</li> </ul>			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p>At the end of the theoretical course of this subject the student will have improved the knowledge and competences about the following topics:</p> <p>Chapter 1: Definition and concept of social medicine</p> <ol style="list-style-type: none"> <li>1. Social medicine as a science, definition</li> <li>2. Social medical method, concepts, goals, areas of activity, study subject of social medicine</li> </ol> <p>Chapter 2: Health care</p> <ol style="list-style-type: none"> <li>3. Basic principles of organization of the health care and health service</li> <li>4. Levels of health care</li> <li>5. Health system – organization and evaluation</li> <li>6. Health organizations and organization of health care system of the Republic of North Macedonia</li> <li>7. System of health insurance and financing of health care in the Republic of North Macedonia</li> </ol>			

	<p>Chapter 3: Family and special services</p> <ol style="list-style-type: none"> <li>8. Family – importance for health, health needs and health care</li> <li>9. Health and social protection of vulnerable groups (children, school children and youth, women, elderly, workers, people with disabilities)</li> </ol> <p>Chapter 4: Disease prevention and management</p> <ol style="list-style-type: none"> <li>10. Social diseases</li> <li>11. Social medical aspects of chronic diseases (cardiovascular diseases, malignant neoplasms, injuries and violence, drug addictions, diabetes mellitus)</li> <li>12. Social medical aspects of infectious diseases (tuberculosis, STDs, HIV/AIDS)</li> </ol> <p>Chapter 5: Health economics</p> <ol style="list-style-type: none"> <li>13. Definition and concept of health economics</li> <li>14. Health needs</li> <li>15. Financing of health care</li> </ol> <p>Chapter 6: Health management</p> <ol style="list-style-type: none"> <li>16. Definition and concept of health management</li> <li>17. Planning of the health care</li> <li>18. Accreditation of health facilities</li> <li>19. Globalization and health</li> <li>20. Evaluation of health and health status of the population</li> <li>21. Informatics, statistics and health evidence</li> </ol> <p>Chapter 7: Health promotion</p> <ol style="list-style-type: none"> <li>22. Behavior and health education - definitions, goals, principles and stages in the development of the health education process.</li> <li>23. Contents and areas of activity of health education</li> <li>24. Health promotion methods and tools</li> <li>25. Methodology of developing and implementing a health education program in the community</li> </ol> <p>Practical lessons:</p> <p>Chapter 1: Medical documentation and evidence.</p> <ol style="list-style-type: none"> <li>1. Legislation for evidence in health</li> <li>2. Basic medical documentation, daily and current health reports.</li> <li>3. Individual and aggregated reports.</li> <li>4. ICD 10 – meaning, structure and practical application</li> </ol> <p>Chapter 2: Social medical diagnostics – health evaluation.</p> <ol style="list-style-type: none"> <li>5. Health evaluation</li> <li>6. Health indicators for monitoring and studying the population health</li> </ol> <p>Chapter 3: Health care in the community</p> <ol style="list-style-type: none"> <li>7. Methodology and preparation of health profile in the community and for certain specific groups of the population.</li> <li>8. Health statistical research.</li> <li>9. Monitoring and assessment of health risks</li> </ol>
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13.	Interconnection between subjects	Related to all subjects in the study program. Passed exam is obligated for Public Health - Clinical Practice.		
14.	Description of the subject's study and working methods in details	Lectures, exercises, seminars, field practical course		
15.	Total available time frame	60 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	20 hours
		16.2.	Practical lessons, seminars, team work: hours	10 hours
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	30 hours
18	Requirements for signature	To get a signature the student is required to attend the theoretical, practical training and seminars and to achieve minimum points to access the final exam.		
19.	Methods of assessment			
	19.1.	Tests: points Continuous verification of knowledge (Colloquium): 1 written test It covers the first half of all areas of the content of the course of theoretical and practical training of the subject social medicine and health economics, which is divided into two equal parts	min.-max.	18 – 30 points
	19.2.	Seminar paper/project, written and oral presentation: points	min.-max	6-10 points
	19.3.	Final exam: points Oral exam (integrative) – 3 questions of integrative knowlegde, which is important for understanding the whole subject and social-medical activity (for grade 10 = 47-50 points; 9 = 43-46 points; 8 = 39-42 points; 7 = 35-38 points, 6 = 30-34 points)	min.-max.	30-50 points  Theoretical course 3-5 points Practical course 3-5 points  The grade of the subject is formed in accordance with the table of grades, based on the sum of points from all activities, continuous assessment and final exam.
20.	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)
			From 60 to 68 points	6 (six) (E)
			From 69 to 76 points	7 (seven) (D)
			From 77 to 84 points	8 (eight) (C)
			From 85 to 92 points	9 (nine) (B)
			From 93 to 100 points	10 (ten) (A)
21.	Methods of monitoring the quality of the teaching process	Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities		
22.	Literature			

	<b>22.1</b>	<b>Mandatory literature</b>				
		Number	Author	Title	Publisher	Year
		1.	Boulton ML, Wallace R.	<b>Maxcy-Rosenau-Last Public Health &amp; Preventive Medicine</b>	Chicago: McGraw Hill Medical	2022
		2.	Tulchinsky T, Varalinkova E, Cohen MJ	The New Public Health. 4 <sup>th</sup> Edition	Elsevier	2023
	<b>22.2</b>	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Detels R, Karim QA, Baum F, Li L, Leyland AH	Oxford Textbook of Global Public Health [7th ed.]	Oxford University Press	2021
		2.	Donev D, Spasovski M, Tozija F, Kjosevska E	Social medicine	University Ss Cyril and Methodius in Skopje, Faculty of Medicine	2013

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>INTERNAL MEDICINE – CLINICAL PRACTICE</b>			
<b>2.</b>	<b>Code</b>	MED 611			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	University Ss. Cyril and Methodius in Skopje, Faculty of Medicine, Department of Internal Medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Sixth (VI)	Semesters	Eleventh, Twelfth (XI/XII)
<b>7</b>	<b>ECTS credits</b>	15			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Assistant professor Beti Todorovska, MD, PhD - responsible professor * teaching is conducted by all teaching staff at the Department of Internal Medicine			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: acquired credits (passed exam) from Internal Medicine. In order to take the exam the student is obligated to attend and actively participate in the practice during the week period (40 working days for 8 hours daily)			

11.	<b>Subject program goals</b>	Familiarization with diagnostic and therapeutic procedures from internal medicine
12.	<b>Subject content</b>	<p>Patient hospital admission</p> <p>Particularities in taking the patient's medical history clinical exam in the following areas:</p> <ul style="list-style-type: none"> <li>• Hematology</li> <li>• Cardiology</li> <li>• Endocrinology</li> <li>• Pulmonology</li> <li>• Gastroenterology</li> <li>• Nephrology</li> <li>• Rheumatology</li> <li>• Toxicology</li> </ul> <p>Creating a diagnostic procedure algorithm, working diagnosis and treatment plan for individual clinical cases</p> <p>Participating in the practical work at the departments:</p> <ul style="list-style-type: none"> <li>• urine analysis</li> <li>• blood work and blood smear</li> <li>• pre-transfusion tests with appropriate documentation</li> <li>• urinary catheter insertion</li> <li>• rectal examination and rectoscopy</li> <li>• ECG (technique and analysis), ultrasound examination of the cardiovascular system, coronary stress test</li> <li>• invasive angiography (coronography, peripheral angiography and percutaneous interventional procedures)</li> <li>• cardiopulmonary resuscitation</li> <li>• interpretation of chest X-RAY</li> <li>• injections (subcutaneous, intramuscular, intravenous).</li> </ul> <p>Observing and assissting during the following interventions:</p> <ul style="list-style-type: none"> <li>• sternal puncture and smear, bone and bone marrow biopsy</li> <li>• pleural puncture</li> <li>• abdominal puncture</li> <li>• gastric tube insertion and gastric lavage</li> <li>• central vein catheter insertion</li> <li>• central venous pressure measuring</li> <li>• gastroscopy, gastrolavage</li> <li>• endotracheal intubation</li> <li>• mechanic ventilation</li> <li>• kidney biopsy, nephrostomy</li> <li>• urinary catheterisation</li> <li>• hemodialysis</li> <li>• peritoenal dialysis</li> <li>• intra-articular injection, joint puncture, joint dialysis.</li> </ul> <p>The student shall gain theoretical knowledge from the field of internal medicine, regarding hospital patient admission, the student shall familiarize with the particularities of taking medical history from each area, as well as particularitites of clinical examination in various areas in internal medicine. The student shall familiarize with the procedures for setting a working diagnosis and treatment plan of individual clinical cases.</p>

		<p>The student shall gain skills in modern clinical assessment and treatment. The student shall be able to individually perform patient admission, urine analysis, blood work, pre-transfusion tests with legal documentation, insertion of a urinary catheter, rectal exam, rectoscopy, ECG (technique and analysis), cardiopulmonary resuscitation, chest X-RAY interpretation, injections (subcutaneous, intramuscular and intravenous).</p> <p>The student shall observe and assist at the following interventions: sternal puncture and smear, pleural puncture, abdominal puncture, gastric tube insertion and gastric lavage, insertion of a central venous catheter, measuring of central venous pressure, gastroscopy, endotracheal intubation, mechanic ventilation, peritoneal dialysis.</p> <p>The lectures shall be organized for the period of 8 workin weeks with a full-time schedule of 8 hours. Four rotations shall be organized during the XI<sup>th</sup> and XII<sup>th</sup> semester. The rotations shall encompass a group of 2-5 students by a mentoring principle, with professors and assistants-collaborators. During the rotation, the departments and mentors shall change. Everyday student activities shall be recorded in a special “journal of activities”, which shall be verified by the mentor.</p> <p>Teaching methods:</p> <ul style="list-style-type: none"> <li>• Participation at the professional meetings at the clinic</li> <li>• Participation at morning rounds</li> <li>• Participation in the daily work at the departments at the following: Clinic for Nephrology, Clinic for Cardiology, Clinic for Pulmonology, Clinic for Toxicology, Clinic for Hematology, Clinic for Gastroenterohepatolgy, Clinic for Rheumatology and Clinic for Endocrinology.</li> <li>• Participation in interventions from the field of internal medicine.</li> </ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Total available time frame</b>	450 hours		
15.	<b>Distribution of available hours</b>	320 hours for practice 130 hours for home studying		
16.	<b>Forms of teaching activities</b>	16.1	Practice (laboratory, clinical), seminars, team work	320 hours of practice
17.	<b>Other forms of activities</b>	17.1	Studying at home	130 hours
18.	<b>Requirements for signature</b>	<p><b>Conditional criteria:</b></p> <p>In order to obtain a signature and to obtain the minimum number of points to pass, the student must attend the practice and master every activity and skill determined in the study program.</p>		
19.				

	19.1.	Grading criteria	The student must obtain a minimum of 60 points. Grades shall be descriptive (pass/fail).			
	19.2.	The student is obligated to attend and actively participate in the practice during the week period (40 working days for 8 hours daily) min – max  Practice* points * attendance: 1,1 points, activity (skills): 2,1 points				60-100
20.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation for the subject, teachers and associates participating in the teaching.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson JL	Harrison`s Principles of Internal Medicine 21th edition	Chicago: McGraw Hill	2022
		2.	Goldman L, Ausiello D.	Goldman-Cecil Medicine, 27 <sup>th</sup> edition	New York: Elsevier	2023
		Additional literature				
	22.2.	Number	Author	Title	Publisher	Year
		1.	Genadieva Stavrikj S. Ed.	Internal Medicine	Skopje: Vinsent Grafika	2020
		2.	Georgievska Ismail Lj, Poposka L, Trajkov I, Gjorgov N.	Electrocardiography Skopje	(COIBSS.MK – ID71834122):	2008
		3.	Grozdanovski R, Ivanovski N.	Chronic Renal Disease – Prevention, Clinical Manifestation and Treatment Skopje	(COIBSS.MK – ID73515018)	2008
			4.	Bickley LS, Szilagyi PG.	Bate` Guide to Physical Examination and History Taking	Skopje: Akadmski pechat
		5.	Goldman L, Ausiello D.	Cecil Medicine	Skopje:Tabernakul	2012
		6.	Wallach J.	Interpretation of Diagnostic Tests	Skopje: Akadmski pechat, 8 <sup>th</sup> edition,	2013

		7.	Swartz MH.	Textbook of Physical Diagnosis: History and Examination	Skopje: Tabernakul	2010
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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>INTERNAL MEDICINE - SEMINAR</b>			
<b>2.</b>	<b>Code</b>	MED 612			
<b>3.</b>	<b>Study program</b>	<b>General medicine</b>			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Internal Medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Sixth (VI)	semester	Eleventh, twelfth (XI/ XII)
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Assistant professor Beti Todorovska, MD, PhD- responsible professor * teaching is conducted by teaching staff at the Department of Internal Medicine.			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: acquired credits (passed exam) from Internal Medicine. In order to attend the final exam, the student must compose a seminar assignment and present it orally.			
<b>11.</b>	<b>Subject program goals:</b>	The student shall gain experience in problem-based learning through processing of clinical practice cases. The student is to be able to familiarize himself/herself with the internist cause. The student shall be able to process current clinical pathologies through problem-conceptualized seminars, with clinical practice case reports.			
<b>12.</b>	<b>Subject program content</b>	<ul style="list-style-type: none"> <li>Theoretical case processing by suitable themes</li> <li>Case problem solving by suitable themes</li> <li>Problem-conceptualized seminars with an integrated approach of theoretical knowledge, with case reports on clinical cases.</li> </ul> <p>The lectures shall be organized in the duration of 5 days for 4 hours. Four rotations shall be organized during the XI<sup>th</sup> and XII<sup>th</sup> semester.</p> <p>Teaching methods:</p> <ul style="list-style-type: none"> <li>Teaching shall be organized on the basis of a mentoring principle</li> <li>The student shall actively participate in discussions and public case presentations</li> <li>The student shall rotate daily, by a rotation system in seminar groups comprised of 20 students, meetings with experts, participation in “pro” and “con” discussions</li> </ul>			



			• A tutoring model of teaching shall be made available, with case solving			
13.	Interconnection between subjects		Related to all subjects in the study program			
14.	Total available time frame		30 hours			
15.	Distribution of available hours		20 hours for seminars 10 hours for home studying			
16.	Forms of teaching activities		16.1	Lectures – theoretical teaching		
			16.2	Practice (laboratory, clinical), seminars, team work	20 hours	
17.	Other forms of activities		17.1	Project assignments		
			17.2	Individual assignments		
			17.3	Studying at home	10 hours	
18.	Requirements for signature		In order for the student to obtain a signature, the student is obligated to attend and actively participate at the seminars, as well as to obtain the minimum number of points.			
19.	Grading criteria		The student must obtain a minimum of 60 points. Grades shall be descriptive (pass/fail).			
	19.1.	Final exam	Case solving (seminar project)  <div>Written part<div>points</div>14-30</div> <div>Oral presentation<div>points</div>14-30</div> <div>min. – max.</div>			
	19.2.	Seminar paper/project, written and oral presentation	Seminar assignment + oral presentation			
	19.3.	Active participation	<div>min. – max.</div> <div>Seminars*<div>points</div>32-40</div> <div>*The seminars shall be organized during the period of 5 days for 4 hours daily.</div> <div>Attendance 4 points; activities 4 points (4-hour block)</div>			
	Methods of monitoring the quality of the teaching process		Student anonymous evaluation for the subject, teachers and associates participating in the teaching.			
21.	Literature					
	21.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson JL	Harrison`s Principles of Internal Medicine 21th edition	Chicago: McGraw Hill	2022
		2.	Goldman L, Ausiello D.	Goldman-Cecil Medicine, 27 <sup>th</sup> edition	New York: Elsevier	2023
	21.2.	Additional Literature				
	Number	Author	Title	Publisher	Year	

		1.	Georgievska Ismail Lj, Poposka L, Trajkov I, Gjorgov N.	Electrocardiography Skopje	(COIBSS.MK – ID71834122):	2008
		2.	Grozdanovski R, Ivanovski N.	Chronic Renal Disease – Prevention, Clinical Manifestation and Treatment Skopje	(COIBSS.MK – ID73515018)	2008
		3.	Grozdanovski R, Ivanovski N.	Chronic Renal Disease – Prevention, Clinical Manifestation and Treatment Skopje	(COIBSS.MK – ID73515018)	2008
		4.	Bickley LS, Szilagyi PG.	Bate' Guide to Physical Examination and History Taking	Skopje: Akadmski pechat	2012
		5.	Goldman L, Ausiello D.	Cecil Medicine	Skopje:Tabernakul	2012
		6.	Wallach J.	Interpretation of Diagnostic Tests	Skopje: Akademski pechat, 8 <sup>th</sup> edition,	2013
		7.	Swartz MH.	Textbook of Physical Diagnosis: History and Examination	Skopje: Tabernakul	2010

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Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	PEDIATRICS-CLINICAL PRACTICE			
2.	Code	MED 613			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Pediatrics			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Sixth (VI)	Semester	Eleventh/twelfth (XI/XII)
7.	ECTS credits	6			
8.	Professor (when more professors, responsible professor is assigned)	Assos. Prof. Sonja Bojadzieva - responsible professor *Lectures held by the professors from the Department of Pediatrics			
9.	Language of the study	English			

10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	<p>Preconditions for attending the classes: credit points gained (passed exam) in Pediatrics.</p> <p>To obtain the right to a final exam and score the minimum amount of points necessary for passing of the pediatrics exam , the student is obliged to attend the clinical practice and must master all the skills and activities which are planned in the subject program.</p>
11.	<b>Subject program goals (competences) and study results:</b>	<p>Objectives of the program :</p> <p>Familiarization with the diagnostic and therapeutic procedures in the field of clinical pediatrics</p>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Contents of the program :</b></p> <ol style="list-style-type: none"> <li>Admission of a sick child in the hospital</li> <li>Particularities in the taking of the patient's medical history according to the department</li> <li>Particularities of the physical exam according to the department : <ul style="list-style-type: none"> <li>Hematology</li> <li>Oncology</li> <li>Cardiology</li> <li>Endocrinology</li> <li>Pulmology</li> <li>Immunology</li> <li>Gastroenterology</li> <li>Neurology</li> <li>Metabolism</li> <li>Neonatology</li> <li>Nephrology</li> <li>Intensive care</li> </ul> </li> <li>Creating of algorithms for diagnostic procedures, work diagnosis and therapy plan in various clinical cases</li> <li>Participation in the clinical work at the department <ul style="list-style-type: none"> <li>urine analyses</li> <li>complete blood count and blood smear</li> <li>pre-transfuzion testing with a legal documentation</li> <li>insertion of a urine catheter</li> <li>ECG (technique and analyses)</li> <li>cardio-pulmonay resuscitation</li> <li>interpretation of a chest x-ray</li> <li>injections (subcutaneous, intramuscular, intravenous)</li> </ul> </li> <li>To attend and to participate in the following procedures : <ul style="list-style-type: none"> <li>Blood and bone marrow smear</li> <li>pleural puncture</li> <li>abdominal puncture</li> <li>insertion of a gastric tube and gastric lavage</li> <li>insertion of central venous catheter</li> <li>measurement of central venous pressure</li> </ul> </li> </ol>

		<ul style="list-style-type: none"><li>• continuous measurement of blood glucose</li><li>• continuous measurement of blood pressure (Holter)</li><li>• measurement of blood glucose with glucometer</li><li>• gastroscopy, endotracheal intubation</li><li>• artificial ventilation</li><li>• peritoneal dialysis</li></ul> <p>The clinical practice will be held over three working weeks, with full time working hours (eight hours a day). Four cycles will be held during the XI and XII semester. Cycle rotations between the wards are organized and the mentors will shift. The student’s everyday activities will be noted in a designated “activity diary” , which will be verified by the mentors signature.</p>		
13.	Interconnection between subjects	Related to all subjects in the study program.		
14.	Description of the subject’s study and working methods in details	<b>Learning methods:</b> Participation in the grand rounds of the Clinic Participation in the everyday work of the Pediatric departments Participation in the procedures form the field of pediatrics		
15.	Total available time frame	180 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	
		16.3.	Practice: hours	120 hours of exercises
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	60 hours of home learning
18.	Requirements for signature	<b>Conditional criteria:</b> To obtain the right to a final exam and score the minimum amount of points necessary for passing of the pediatrics exam , the student is obliged to attend the clinical practice and must master all the skills and activities which are planned in the subject program		
19.	Methods of assessment			
	19.1.	Tests: points		
	19.2.	Seminar paper/project, written and oral presentation: points		
	19.3.	Final exam: points		

20.	Grading criteria (points/grade)	The student is obliged to attend and actively participate in the clinical practice during three weeks, 15 working days  Clinical practice score attendance 33 points, participation (skills) 34 points.  The student must achieve a minimum score of 60 points. The scoring is descriptive (passed).				
21.	Methods of monitoring the quality of the teaching process	Anonymous evaluation by the students of the subject, the teachers and the collaborators who participate in the education				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	<a href="#">Kliegman R</a> , <a href="#">Stanton B</a> , <a href="#">Geme JS</a> , <a href="#">Schor N</a> , <a href="#">Behrman R</a>	Nelson Textbook of Pediatrics, 21th edition	New York: Elsevier	2019
		2.	Lissauer T, Clayden G	Illustrated Texbook of Pediatrics	New York: Elsevier	2011
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Rudolph M, Lee T, Leven M	Pediatrics and Children’s health	McGraw Hill	2018

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>PEDIATRICS-SEMINAR</b>			
2.	<b>Code</b>	MED 614			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Pediatrics			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Sixthh (VI)	Semester	Eleventh or twelfth (XI or XII)
7.	<b>ECTS credits</b>	1			

8.	Professor (when more professors, responsible professor is assigned)	Assosiate Prof. Sonja Bojadzieva, PhD, MD - responsible professor *The classes are conducted by the members of the Department of Pediatrics		
9.	Language of the study	English		
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: credit points gained from the exam in Pediatrics and from the Clinical practice in Pediatrics. To obtain the right to a final exam the student is obliged to prepare a seminar assignment and a power point presentation.		
11.	Subject program goals (competences) and study results:	During the seminars, which are problem-based, in the midst of a case presentation , the actual pathology is discussed . The student receives the opportunity to become familiarized with the broader spectrum of Pediatric casuistry		
12.	Subject content in details by chapters and units, with study results for every chapter	<ul style="list-style-type: none"><li>• Theoretical processing of cases from various pediatric topics</li><li>• Problem-solving of cases from various pediatric topics</li><li>• Case presentation during seminars which are problem-based</li></ul> The classes will be held over five days, for four hours each. Four cycles will be held during the XI and XII semester		
13.	Interconnection between subjects	Related to all subjects in the study program.		
14.	Description of the subject's study and working methods in details	<b>Methods of learning:</b> <ul style="list-style-type: none"><li>• The classes are conducted by the professors as mentors</li><li>• The student actively participates in the discussion and in the public case presentations</li><li>• The student will work every day in groups of 20 students on a rotational principle, will have meetings with experts, will participate in “for or against “ types of discussions</li></ul> A tutorial system of education with problem solving will be conducted		
15.	Total available time frame	30 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	20 hours of seminars
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	10 hours of home learning
18.	Requirements for signature	To complete the seminar the student is obliged to attend and take active participation in the seminars, also to achieve the necessary score minimum.		
19.	Methods of assessment			
	19.1.	Tests: points		
	19.2.	Seminar paper/project, written and oral presentation: points		Seminar assignment written + oral presentation

	19.3.	Final exam: points			Solving of a case (seminar assignment)  min. – max. Written part                      points    15 - 30 Oral presentation                      points    15 - 30	
20.	Grading criteria (points/grade)			min. - max. Seminars*                      points    30 - 40 *The seminars are held over five days , for four hours each . Attendance : 4 points; participation: 4 points  The student must achieve minimum 60 pointsThe scoring is descriptive (passed).		
21.	Methods of monitoring the quality of the teaching process			Anonymous evaluation by the students of the subject, the teachers and the collaborators who participate in the education		
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Kliegman R, Stanton B, Geme JS, Schor N, Behrman R	Nelson Textbook of Pediatrics, 21th edition	New York: Elsevier	2019
		2.	Lissauer T, Clayden G	Illustrated Texbook of Pediatrics	New York: Elsevier	2011
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
1.		Rudolph M, Lee T, Leven M	Pediatrics and Children’s health	McGraw Hill	2018	

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
1.	Subject	<b>RATIONAL DRUG PRESCRIBING AND NATURAL WAYS OF HEALING</b>
2.	Code	MED 615
3.	Study program	General Medicine
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Medical Faculty, Department of Preclinical and Clinical Pharmacology with Toxicology
5.	Degree of education (first,	Integrated 6-year studies

	<b>second, third cycle)</b>				
<b>6.</b>	<b>Academic year/semester</b>	Year	Sixth (VI)	Semester	Eleventh or twelfth (XI or XII)
<b>7</b>	<b>ECTS credits</b>	2			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Dimche Zafirov PhD, MD –responsible teacher *Lectures held by professors from the Department of Preclinical and Clinical Pharmacology with Toxicology			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: Fulfilled condition to enroll in the VII semester. In order to take the final exam, the student should obtain the minimum points in the continual assessments; If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• Gaining knowledge about the basic concept of rational pharmacotherapy;</li> <li>• Making assessment and use of the concept for making a choice for a „personal” medication;</li> <li>• Gaining basic knowledge about the natural ways of healing, especially about the herbal medicines...</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Basic principles of rational drug prescribing.</li> <li>• Rational drug prescribing for selected indications.</li> <li>• Natural ways of healing.</li> <li>• Herbal medicines, efficacy and safety associated with the use of the herbal medicines.</li> </ul> <b>Practical lessons:</b> <ul style="list-style-type: none"> <li>• Evaluation and solving of case-reports by using the concept for making a choice for a „personal” medication for selected diseases (practical exercises and seminars).</li> </ul>			
<b>13.</b>	<b>Interconnection between subjects</b>	Related to all subjects in the study program.			
<b>14.</b>	<b>Description of the subject's study and working methods in details</b>	Interactive teaching during lectures, practical trainings and seminars.			
<b>15.</b>	<b>Total available time frame</b>	60 classes			
<b>16.</b>	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	30	



		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	20
18.	Requirements for signature	In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present. If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam  Active participation (points) <div>min – max</div> Theoretical course 3 – 5 Practical course 10 – 15		
19.	Methods of assessment			
	19.1.	Tests: points	<div>min – max</div> <b>Continual assessment - points</b> 12 – 20  *1 written test with case-reported included for individual dosage adjustment (team work)  The student is obligated to achieve a minimum of the intended points for each part of the assessment to pass the continual assesment. Otherwise the final exam is considered failed.	
	19.2.	Seminar paper/project, written and oral presentation: points	<div>min – max</div> Seminar paper 24 – 40	
	19.3.	Final exam: points	<div>min – max</div> <b>Oral examination*</b> points 6 – 10 <b>Practical examination**</b> points 6 – 10  * <b>Oral examination (integrative)</b> – Interactive evaluation of knowledge.  ** <b>Practical examination (catalog skills)</b> – Text materials prepared for the practical course.  The student has to fulfill the minimum requiired points for every part of the examination in order to be able to get the scores for the final examination. Otherwise the final exam is considered failed. The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.	

20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation for the subject, teachers and associates participating in the teaching			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Sharon E. Straus et al	Evidence-Based Medicine: How to Practice and Teach EBM	New York: Elsevier	2018
		2.	Schulz V, Hansel R, Tyler VE	Rational phytotherapy	Berlin Heidelberg: Springer-Verlag	2001
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Capaso F, Gaginela T, Grandolini G, Izzo A.	Phytotherapy, a quick reference to herbal medicine	Berlin: Springer	2003
		2.	Zafirovska K et al.	Guidelines for implementing of evidence based medicine	Ministry of Health of R. Macedonia	2012
		3.	Rang and Dale’s: H.P.Rang, M.M.Dale, J.M. Ritter, R. Flower	Pharmacology, Ninth edition	New York: Elsevier	2020

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
1.	<b>Subject</b>	<b>FAMILY MEDICINE – CLINICAL PRACTICE</b>
2.	<b>Code</b>	MED 616
3.	<b>Study program</b>	General medicine
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Family Medicine

5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Sixth (VI)	Semester	Eleventh or twelfth (XI or XII)
7	<b>ECTS credits</b>	2			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Katarina Stavrikj - PhD, MD			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: completed exam and credits from Family medicine subject			
11.	<b>Subject program goals (competences) and study results:</b>	Understand the organization of primary care practice and integrate their acquired knowledge and skills using the basic principles of family medicine in solving the common patient problems.			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Subject content:</b> The student at the end of the practical work will:</p> <ul style="list-style-type: none"> <li>• Describe the position of primary health care system</li> <li>• Describe which conditions are addressed in primary health care</li> <li>• Assign appropriate diagnostic procedures and treatments according to the incidence and prevalence of diseases</li> <li>• Explain the specifics of the patient – doctor's relationship that are unique in family medicine</li> <li>• Conduct a consultation</li> <li>• Become familiar with the screening, diagnosis and management of most common chronic noncommunicable diseases in primary care</li> <li>• Perform a consultation and propose initial therapy for common acute illness</li> <li>• Solve cases where there is clinical insecurity</li> <li>• Discuss with the educator on the ethical aspects of family medicine</li> <li>• Demonstrates empathy and respect for the patient</li> <li>• Promote health promotion and disease prevention among patients</li> </ul> <p>Clinical practice will be organized in the course of 1(one) working week full time of 8 hours in ambulance under the supervision of an educator. 4 clinical rotations will be organised during the XI and XII semester. Everyday activities of the student will be recorded in a separate "activity log" that will be verified with the educator's signature.</p>			

13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program.		
14.	<b>Description of the subject's study and working methods in details</b>	Participation in the daily work in the practice under supervision of an educator - GP. During the stay, it is necessary to perform the following clinical skills independently: measuring blood pressure, determining BMI, performing and interpretation of ECG, calculate cardiovascular risk, clinical examination of breast. • Processing of a case from practice and preparation of a presentation.		
15.	<b>Total available time frame</b>	60		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	
		16.3.	Practice: hours	40
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	20
18.	<b>Requirements for signature</b>	To obtain the signature, student is required to attend the practical work in a GP's practice for 5 days and to achieve all clinical skills planed in the subject program..		
19.	<b>Methods of assessment</b>	<b>The assessment of the student is descriptive (passed)</b>		
	19.1.	Tests: points		
	19.2.	Seminar paper/project, written and oral presentation: points		
	19.3.	Final exam: points min-max Written part 18-30 Oral part 20-30 Seminar essay 5-12 Attendance Theoretical part 5-10 Attendance Practical part 12-18		
20.	<b>Grading criteria (points/grade)</b>		Up to 59 points	5 (five) (F)
			From 60 to 68 points	6 (six) (E)
			From 69 to 76 points	7 (seven) (D)
			From 77 to 84 points	8 (eight) (C)
			From 85 to 92 points	9 (nine) (B)
			From 93 to 100 points	10 (ten) (A)
21.	<b>Methods of monitoring the quality of the teaching process</b>	Students' anonymous evaluation of the subject and medical staff included in the teaching process.		
22.	<b>Literature</b>			

	<b>22.1.</b>	<b>Mandatory literature</b>				
		Number	Author	Title	Publisher	Year
		1.	Rachel R.	Textbook of family medicine	Philadelphi: Saunders	2015
	<b>22.2.</b>	<b>Additional literature</b>				
		Number	Author	Title	Publisher	Year
		1.	Stavrikj K, Petrovski G, Nikolovska S, Kiteva Trencева G, Gerasimovska B, Stojanovski Z	Family medicine (on line available)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Family Medicine	2013

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>PUBLIC HEALTH - CLINICAL PRACTICE</b>			
<b>2.</b>	<b>Code</b>	MED 617			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Epidemiology and Biostatistics, Department of Occupational Medicine, Department of Social Medicine, Department of Hygiene			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Sixth (VI)	Semester	Eleventh - twelfth (XI-XII)
<b>7</b>	<b>ECTS credits</b>	4			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Jordan Minov, PhD, MD - responsible professor *education process is performed by the members of Department of Epidemiology and Biostatistics, Department of Occupational Medicine, Department of Social Medicine, Department of Hygiene			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Acquired credits (passed exams) from the following subjects: Epidemiology, Occupational medicine, Social Medicine and Hygiene. In order to get access to the final exam, the student must finish the seminar work.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	Adoption of the basic principles, knowledge and practice of public health in the field of epidemiology and biostatistics, occupational medicine, social medicine and hygiene.			

12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b>  <b>Epidemiology and Biostatistics</b></p> <p><b>Epidemiology</b></p> <ul style="list-style-type: none"> <li>• Epidemiological principles, models, epidemic process, prevention measures</li> <li>• Epidemiological methods (descriptive, analytical, experimental)</li> <li>• Epidemiological features of certain communicable and non-communicable diseases</li> </ul> <p><b>Biostatistics</b></p> <ul style="list-style-type: none"> <li>• Descriptive statistical methods</li> <li>• Analytical methods</li> <li>• Vital statistics</li> </ul> <p><b>Occupational Medicine</b></p> <ul style="list-style-type: none"> <li>• Work place, work environment, professional risk - assessment of the effects of occupational exposure on the health of exposed workers</li> <li>• Occupational diseases, work-related diseases and injuries at work: clinical (diagnostic, therapeutic procedures) - preventive and public health aspects in practice</li> <li>• Work ability assessment, absence, disability, rehabilitation</li> <li>• Preventive Strategy - levels and measures; workplace health promotion (multidisciplinary and intersectoral approach); legislative aspects (examples and solutions in practice)</li> <li>• Interventional public health prevention programs (examples, analysis, recommendations) in occupational medicine</li> </ul> <p><b>Social Medicine</b></p> <ul style="list-style-type: none"> <li>• Evaluation of health, individual and community health</li> <li>• Health care system - organization and evaluation</li> <li>• Priority public health problems, risks, strategies, policies</li> <li>• Health promotion and disease prevention</li> <li>• Health Policy, Health Economics and Management: analysis of policies and good practice</li> </ul> <p><b>Hygiene</b></p> <ul style="list-style-type: none"> <li>• Application of the basic methodological approach for eco-toxicological risks assessment</li> <li>• Exposure and health risk assessment from physical, chemical, biological and radiological agents in the environment</li> <li>• Regulations, standards and food safety monitoring</li> <li>• Nutrition and physical activity, public health importance through practical examples</li> </ul>
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		<ul style="list-style-type: none"><li>Strategies and policies to determine priorities and risk management in the field of environmental health, nutrition and food safety</li></ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"><li>The study program will be arranged within 2 working weeks (full time 8 hours).</li><li>Four courses will be organized during the XI and XII semester.</li><li>Students are organized in groups consisting of 2-5 members (students) on mentor principle by the professors and assistants. During the course different departments and mentors are taking place. Student's daily activities will be registered in a separate „Diary of activities“ which will be verified by a mentor's signature.</li></ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program.		
14.	<b>Description of the subject's study and working methods in details</b>	<ul style="list-style-type: none"><li>Interactive work, work on mentor's principle, individual work, work in small groups, problem solving</li><li>Processing, reporting and case resolving of different segments of public health practice</li><li>Data analysis, computer simulation</li><li>Evaluation of the scientific literature, consulting, essays, seminar papers</li><li>Problem resolving designed seminars, public presentation, discussion</li></ul>		
15.	<b>Total available time frame</b>	120 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	
		16.3.	Practice: hours	80
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	40 hours
18.	<b>Requirements for signature</b>	In order to obtain a signature and get access to the final exam, the student should attend the practical work and obtain minimum points.		
19.	<b>Methods of assessment</b>			
	19.1.	Tests: points		
	19.2.	Seminar paper/project, written and oral presentation: points		Seminar work: written form + public presentation min. - max. points 36 - 60  Practical course *

			min - max points 24 - 40  * The course is organized within 10 days by 8 hours (full time). Presence: 2 points; activity: 2 points			
	19.3.	Final exam: points	The student should get a minimum 6 points of each subject of the practice (epidemiology and biostatistics, occupational medicine, social medicine and hygiene)			
20.	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Tulchinsky T, Varavikova E.	The New Public Health, 3rd Edition	New York: Elsevier	2015
		2.	Wallace/Maxcy-Rosenay-Last	Public Health & Preventive Medicine	Chicago: The Mc Graw-Hill Companies. Inc	2008
		3.	Kochubovski M, Ristovska G, Spiroski I, Petrova A.	Manual for hygiene and Environmental health	Skopje, Faculty of Medicine	2021
		4.	Fries R	Epidemiology for Public Health	Atlanta: CDC	2011
		Additional literature				
		Number	Author	Title	Publisher	Year



		1.	Novik LF, Morrow CB, Mays GP	Administration of Public Health: principles for management based on population	Skopje: Academic Press	2011
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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>SURGERY-CLINICAL PRACTICE</b>			
<b>2.</b>	<b>Code</b>	Med 621			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Surgery			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6 - year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Sixth (VI)	Semester	Eleventh (XI) or twelfth (XII)
<b>7.</b>	<b>ECTS credits</b>	15 credits			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Oliver Stankov, PhD, MD - responsible professor *Lectures held by the professors from the Department of Surgery			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: passed exam Surgery. There are no tests for this subject, the student is passed if she/he achieve minimum points of the practical course			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	Introducing with diagnostic and therapeutic procedures in the field of clinical surgery			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<ul style="list-style-type: none"> <li>• Characteristic of history taking on every department</li> <li>• Characteristic of clinical examination on the departments of:</li> <li>• Abdominal Surgery</li> <li>• Pediatric Surgery</li> <li>• Thoracic vascular surgery</li> <li>• Urology</li> <li>• Neurosurgery</li> <li>• Traumatology</li> <li>• Plastic Surgery</li> <li>• Intensive care</li> <li>• Participation in the daily work in clinics</li> <li>• Participation in everyday surgical work on the surgical departments</li> <li>• Treatment of a patient in an unconscious state</li> <li>• reanimation of a patient in an unconscious state (ventilatory and cardiac resuscitation)</li> </ul>			

		<ul style="list-style-type: none"> <li>• First aid for bleeding</li> <li>• First aid for fractures</li> <li>• Immobilization techniques (transport and permanent)</li> <li>• bandaging wounds</li> <li>• Treatment of wounds and their suture</li> <li>• Incision of abscess</li> <li>• Local treatment of burns</li> <li>• Giving parenteral therapy and intravenous infusions</li> <li>• Investigation of prostate with rectal tube</li> <li>• Placement of a nasogastric tube</li> <li>• Endotracheal intubation</li> <li>• See placing tracheostomy cannula</li> <li>• Placement of a urinary catheter</li> <li>• Assisting thoracic puncture</li> <li>• see setting thoracic drainage</li> <li>• Assist in reposition hernia</li> <li>• Punctures wrist</li> <li>• Assist in the reposition of fracture</li> <li>• Gives local anesthesia</li> <li>• Assist with basic operations (hernia plastic, gall surgery gall bladder, appendix surgery)</li> <li>• Investigation of large joints</li> <li>• Other minor interventions</li> </ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program.		
14.	<b>Description of the subject's study and working methods in details</b>	Clinical practice will be organized within 4 working weeks with a full time of 8 hours. There will be 2 tenses during the XI and XII semester. During the tense, the departments and mentors change. Everyday activities of the student will be recorded in a separate log of activities that will be verified with the mentor's signature		
15.	<b>Total available time frame</b>	450 hours classes		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	/
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	320
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	65 classes
		17.3.	Studying at home: hours	65 classes
18.	<b>Requirements for signature</b>	Students are required to attend and actively participate to the practical course and seminar work.		
19.	<b>Methods of assessment</b>			

	19.1.	Tests: points			There are no tests for this subject, the student is passed if she/he achieve minimum points of the practical course	
	19.2.	Seminar paper/project, written and oral presentation: points			Students are required to do a seminar work after the practical course. The field of work for the seminar paper is delegate by a mentor.	
	19.3.	Final exam: points			The student is required to attend and actively participate. The student should score at least 60 points. The student's assessment is descriptive (passed) *Practice: 20 days for 8 hours The student assessment is descriptive (passed)	
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process			Student anonymous evaluation of the subject, the teachers and collaborators participating in the teaching		
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Townsend CM, Beauchamp D,	Sabiston textbook of surgery	New York: Saunders	2008
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Greg McLatchie, Borley N, Chikwe J	Oxford Handbook of Clinical Surgery	Oxford University Press	2013

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
<b>1.</b>	<b>Subject</b>	<b>SURGERY - SEMINAR</b>
<b>2.</b>	<b>Code</b>	Med 622
<b>3.</b>	<b>Study program</b>	General Medicine
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Medical Faculty, Department of surgery

5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	sixth (VI)	Semester	Eleventh (XI) or twelfth (XII)
7	<b>ECTS credits</b>	1			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Associate Prof. Oliver Stankov, PhD, MD - responsible professor *Lectures held by the professors from the Department of Surgery			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: passed exam Surgery. In order to take the final exam, the student should attend and actively participate in the seminars and get the minimum predicted points for the seminar.			
11.	<b>Subject program goals (competences) and study results:</b>	On seminars that are problematically conceptualized with case report on patients, the current pathology is being processed. The student gets the opportunity to familiarize the wide surgical goal			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>Theoretical process on cases for adequate topics</li> <li>Solving cases on adequate topics</li> <li>Problems conceptualized seminars combined with the case report</li> </ul> Teaching is organized for 5 days after 4 hours. will be organized 2 tours during the XI and XII semester <b>Practical course:</b> Students are assigned to do seminar work			
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program.			
14.	<b>Description of the subject's study and working methods in details</b>	<ul style="list-style-type: none"> <li>Takes place mentoring principle with professors. The student actively participates in discussions and public presentations of cases. The student will work each day by system rotation in seminar groups of 20 students, there will be a meeting with experts, will participate in the discussion "for" and "against". Will perform tutoring model teaching by addressing cases</li> <li>The student will acquire the knowledge to create a diagnostic algorithm, working diagnosis and surgical treatment plan of individual clinical case</li> </ul> <b>Crucial Skills:</b> The student will be able to make the proper choice of treatment for a particular disease with appropriate to the specifics of the individual patient			
15.	<b>Total available time frame</b>	30 hours classes			
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours		
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours		

		16.3.	Practice: hours	20		
17.	Other forms of activities	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours	10		
18	Requirements for signature	In order to get a signature, the student is required to attend and actively participate in the seminars and to get the minimum predicted points for the seminar.				
19	Methods of assessment					
	19.1.	Tests: points	If the student has not obtained the minimum points, he/she will be obligated to pass them before the final seminar (power point) presentation.			
	19.2.	Seminar paper/project, written and oral presentation: points	The student's assessment is descriptive ( <b>passed</b> )			
	19.3.	Final exam: points	The student's assessment is descriptive ( <b>passed</b> )			
20	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process	Student anonymous evaluation of the subject, the teachers and collaborators participating in the teaching				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Greg McLatchie, Borley N, Chikwe J	Oxford Handbook of Clinical Surgery	Oxford University Press	2013
		2.	Townsend CM, Beauchamp D,	Sabiston textbook of surgery	New York: Saunders	2008
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Bakli LS, Shilagi PG.	Bates' Clinical Reviews and Landing History	Philadelphia: LWW	2012

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Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	<b>GYNECOLOGY AND OBSTETRICS- CLINICAL PRACTICE</b>			
2.	Code	MED 623			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Gynecology and Obstetrics			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Sixth (VI)	Semester	Eleventh or twelfth (XI or XII)
7	ECTS credits	7			
8.	Professor (when more professors, responsible professor is assigned)	Associate Prof. Ana Daneva Markova, PhD, MD - responsible professor *Lectures held by the professors from the Department of Gynecology and Obstetrics			
9.	Language of the study	English Language			
10.	Preconditions for attending the classes and taking the subject's exam	Preconditions for attending the classes: credits achieved (passed exam) from Gynecology and obstetrics. In order to take an exam the student should earn a minimum of 60 points. The student's assessment is descriptive (passed).			
11.	Subject program goals (competences) and study results:	Objectives of the course program (competences): Introduction to the diagnostic and therapeutic procedures in the area of urgent gynecology and obstetrics.  Results: To obtain basically knowledge and skills in evaluation, diagnosis, and treatment of patients with gynaecological/ obstetrical issues			
12.	Subject content in details by chapters and units, with study results for every chapter	Course content:  <b>Perinatology</b> <ul style="list-style-type: none"> <li>Filling in obstetric history and birth protocol</li> <li>Obstetric examination: a condition of the cervix, dilatation, fetal heads, presentation, advancement of birth.</li> <li>Obstetric examination: pelvimetry, amnioscopy.</li> <li>Monitoring of the mother: cardiotocography, ph-metric intra partum, ph - blood metric from a new-born</li> <li>Participation in spontaneous labor: head and pelvic treatment, repair of soft-tissue cleavage and episiotomy</li> <li>Assistation in delivery with caesarean section and vaginal delivery obstetric operations: vacuum, forceps, baby extraction</li> <li>Neonatal treatment</li> <li>An ultrasound examination of a pregnant woman in the first half of pregnancy</li> <li>An ultrasound examination of a pregnant woman in the second half of pregnancy</li> <li>Participation in everyday work in the clinic for risky pregnancy</li> </ul>			

		<ul style="list-style-type: none"><li>• Participation in the work of the Intensive Peripartum Care Unit</li></ul> <p><b>Gynecology:</b></p> <ul style="list-style-type: none"><li>• Gynecological examination, taking a swab for microbiology and Papanicolau, colposcopy examination</li><li>• Participation in the daily work of the gynecological departments, taking a history, filling in gynecological history</li><li>• Assistance in small gynecological interventions: curettage, biopsy,</li><li>• spiral insertion, cyst posture, cystoscopy</li><li>• Ultrasound gynecological examination</li><li>• Assistance to major gynecological surgeries: abdominal and vaginal hysterectomy • Assistance in minor and minimally invasive gynecological operations:</li><li>• hysteroscopy, laparoscopy, TVT and TOT prosthesis, IVS prosthesis</li><li>• Working in a gynecological clinic: urogynecological, oncological, ultrasound, colposcopic, ambulance for human reproduction, cytogenetic laboratory, in-vitro fertilization</li><li>• Family Planning and Contraception, Artificial abortion</li><li>Assistance in first and second trimester</li></ul> <p>The practice is carried out within 4 working weeks with a full time of 8 hours, organized in 4 rounds during the XI and XII semesters:</p> <ul style="list-style-type: none"><li>• stay in the maternity room</li><li>• stay in one operational unit</li><li>• stay in the clinic for risky pregnancies</li><li>• stay in the colposcopy clinic and the gynecological ultrasound clinic</li></ul> <p>It takes place in groups of 2-5 students on a mentoring principle with professors and assistants. During the tour, the departments and mentors change.</p> <p>Everyday activities of the student will be recorded in a special “diary of activities ” that will be verified with the mentor's signature.</p>		
13.	Interconnection between subjects	Related to all subjects in the study program.		
14.	Description of the subject’s study and working methods in details	Working in small groups under the close supervision of mentor (student / mentor method)		
15.	Total available time frame	210 classes		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	/
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	
		16.3.	Practice: hours	160
	Other forms of activities	17.1.	Project tasks: hours	/

17.			17.2.	Individual tasks: hours	50	
			17.3.	Studying at home: hours	/	
18	Requirements for signature		Attending and participating of minimum of 80% of planed classes and study program of 4 weeks (20 working days, 8 hours daily)			
19	Methods of assessment					
	19.1.	Tests: points			/	
	19.2.	Seminar paper/project, written and oral presentation: points			100 points	
	19.3.	Final exam: points			/	
20.	Grading criteria (points/grade)			The student should earn a minimum of 60 points. The student's assessment is descriptive (passed).		
21.	Methods of monitoring the quality of the teaching process			Student anonymous evaluation of the course and teachers and associates participating in teaching.		
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Richa S	Practical guide to Obstetrics and Gynecology	New Delhi: Jaypee Brothers Medical publishers Ltd.	2015
		2.	Bickerstaff H, Kenny C L.	Gynaecology by ten Teachers, 20 <sup>th</sup> Edition.	London, New York: CRC Press	2017
		3.	Kenny CL, Myers JE	Obstetric by ten Teachers, 20 <sup>th</sup> Edition.	London, New York: CRC Press	2017
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Hoffman B, Schorge J, Halvorson L, Karen Bradshaw K, Cunningham F	Williams Gynecology Second Edition	Chicago: McGraw Hill Profesional	2012



		2.	Cunningham F, Leveno K, Bloom S, Hauth J, Rouse D, Spong C	Williams Obstetric 23 <sup>rd</sup> Edition	Chicago: McGraw Hill Professional	2009
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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>GERONTOLOGY</b>			
<b>2.</b>	<b>Code</b>	MED - 626			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Internal Medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	year	Sixth (VI)	Semester	Eleventh or twelfth (XI or XII)
<b>7.</b>	<b>ECTS credits</b>	2			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Assistant professor Beti Todorovska, MD, PhD - responsible professor * teaching is conducted by all teaching staff at the Department of Internal Medicine			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: obtained credits (passed exam) of Internal Medicine. In order to take the exam the student must attend the theoretical and practical part of the study course, as well as to obtain the minimum number of required points.			
<b>11.</b>	<b>Subject program goals (competence) and study results:</b>	<ul style="list-style-type: none"> <li>• Introduction to Geriatric Medicine as part of interdisciplinary science of internal medicine, as well as its position in the medical disciplines;</li> <li>• Introduction to the distinct internal diseases that affect the geriatric population;</li> <li>• Introduction to the particularities in therapy approach in the geriatric population</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Geriatric pulmonary diseases (particularities in patient medical history, clinical examination and diagnostic procedures in geriatric patients with diseases of the pulmonary system);</li> <li>• Particularities of geriatric diseases of the cardiovascular system (diagnostic procedures and treatment approach in the geriatric population when treating cardiovascular diseases);</li> <li>• Geriatric hematological diseases: anemias, myelodysplastic syndrome, leukemias, multiple myeloma, platelet disorders, coagulation disorders);</li> <li>• Geriatric renal diseases: primary and secondary</li> </ul>			

		<p>glomerulopathy, tubulointerstitial diseases, acute and chronic renal insufficiency, urinary tract infections;</p> <ul style="list-style-type: none"><li>Geriatric endocrine diseases: diabetes, thyroid disorders, osteoporosis and osteomalacia;</li><li>Geriatric rheumatic diseases: degenerative joint diseases, osteoporosis, rheumatoid arthritis, systemic lupus, systemic sclerosis, gout, polymyalgia rheumatic, fibromyalgia, rehabilitation, physical activity and exercise;</li><li>Diseases of the gastrointestinal system: acute gastrointestinal conditions, esophageal diseases, stomach and duodenum, diseases of the small and large intestine, diseases of the anorectal region, hepatic and biliary tract diseases, and their distinctiveness in the geriatric population;</li><li>Polypharmacy in the geriatric population and intoxications.</li></ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"><li>The student shall acquire knowledge and skills in care and treatment of a geriatric patient with a disease or in ill state.</li><li>The student shall be enabled to apply his/her acquired knowledge, and shall acquire skills in modern clinical evaluation and treatment.</li></ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject’s study and working methods in details</b>	Interactive lectures and practical activities, individual studying.		
15.	<b>Total available time frame</b>	60 hours – 40 hours theoretical teaching and practice; 20 hours studying at home		
16.	<b>Forms of teaching activities</b>	16.1	Theoretical teaching	16 hours
		16.2	Clinical practice	24 hours
17.	<b>Other forms of activities</b>	17.1	Project assignments	
		17.2	Individual assignments	
		17.3	Studying at home	20 hours
18.	<b>Requirements for signature and attending the final exam</b>	<p><b>Conditional criteria:</b></p> <p>In order to acquire a signature, the student must attend the theoretical and practical part of the study course, as well as to obtain the minimum number of required points. The grade is then formed in accordance to the grading table based on the total point sum from the required activities and exams.</p>		
19				
	19.1.	Tests: points		
	19.2.	Final exam	<p>min – max points 29-47</p> <p>Oral exam*</p> <p>* The oral exam includes acquired knowledge review from the theoretical part, as well as clinical practice, conducted via processing and presentation of an assigned clinical case.</p>	
	19.3.	Active participation	min – max	

			Theoretical teaching* points 1 – 5 Clinical practice** points 30 – 48 * Attendance at theoretical lectures: 51-60% - 1 pt.; 61-70% - 2 pts.; 71-80% - 3 pts.; 81-90% - 4 pts.; 91-100% - 5 pts.; ** The clinical practice shall be conducted in the period of 5 days, 8 hours daily, with planned activities in the journal for clinical practice, for which the student shall receive points. attendance: 2 points, activities: 4 points			
20	Grading criteria (points/grade)	Up to 59 points		5 (five) (F)		
		From 60 to 68 points		6 (six) (E)		
		From 69 to 76 points		7 (seven) (D)		
		From 77 to 84 points		8 (eight) (C)		
		From 85 to 92 points		9 (nine) (B)		
		From 93 to 100 points		10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation for the subject, teachers and associates participating in the teaching.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Pathy J, Sinclair A, Morley J	Principles and Practice of Geriatric Medicine, 4 <sup>th</sup> Edition	New York: Wiley	2006
		2.	Beers MH, Berkow R.	The Merck Manual of Geriatrics	Rahway: Merck research laboratories	2000
	22.2.	Additional literature:				
		Number	Author	Title	Publisher	Year
		1.	Goldman L, Ausiello D.	Goldman-Cecil Medicine, 27 <sup>th</sup> edition	New York: Elsevier	2023
		2.	Loscalzo J. et al.	Harrison`s Principles of Internal Medicine 21th edition	Chicago: McGraw Hill	2022
			3.	Durakovich Z et al.	Geriatrics: Medicine of the Elderly	Zagreb: ST – poslovne informacije

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>PALLIATIVE MEDICINE</b>			
2.	<b>Code</b>	MED 627			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Internal Medicine			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	year	Sixth (VI)	Semester	Eleventh or twelfth (XI or XII)
7.	<b>ECTS credits</b>	2			

8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Assistant professor Beti Todorovska, MD, PhD- responsible professor * teaching is conducted by all teaching staff at the Department of Internal Medicine
9.	<b>Language of the study</b>	English
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: obtained credits (passed exam) of Internal Medicine. In order to take the exam, the student must attend the theoretical and practical part of the study course, as well as to obtain the minimum number of required points.
11.	<b>Subject program goals (competence) and study results:</b>	<ul style="list-style-type: none"> <li>• Introduction to palliative medicine as part of interdisciplinary science of internal medicine;</li> <li>• Introduction to the particularities of palliative medicine;</li> <li>• Introduction to the particularities in therapy approach in patients seeking palliative care and terminally ill patients;</li> <li>• Introduction to the ethical and legal aspects of palliative medicine;</li> <li>• Pain treatment with pharmacological and non-pharmacological agents;</li> <li>• Adoption of communication models and special circumstances.</li> </ul>
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Basics of palliative medicine (manner of organizational setup, international development);</li> <li>• Types and ways of organizing palliative care – ambulatory, hospital and consultative</li> <li>• Pain and symptom management – interdisciplinary approach;</li> <li>• Gastrointestinal symptoms (constipation, diarrhea, nausea, vomiting);</li> <li>• Pulmonary symptoms (dyspnea, cough);</li> <li>• Terminally ill patient care;</li> <li>• Physiological and psychological aspects of palliative medicine;</li> <li>• Ethical and legal aspects of palliative medicine;</li> <li>• Teams for providing palliative care;</li> <li>• Patient communication, family requiring palliative care.</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>• The student shall acquire knowledge on the most common conditions in palliative care, ways of providing palliative care and organization;</li> <li>• The student shall acquire skills needed to recognize terminally ill patients, the most common indications for palliative care, recognition of the specifics, as well as manner of communication with the patient and the family in special situations.</li> </ul>
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program

14.	Description of the subject's study and working methods in details		Interactive lectures and practical activities, individual studying.	
15.	Total available time frame		60 hours – 40 hours theoretical teaching and practice; 20 hours studying at home	
16.	Forms of teaching activities	16.1	Theoretical teaching	8 hours
		16.2	Practice (laboratory, clinical, seminars, team work)	32 hours
17.	Other forms of activities	17.1	Project assignments	
		17.2	Individual assignments	
		17.3	Studying at home	20 hours
18.	Requirements for signature and attending the final exam		In order to acquire a signature, the student must attend the theoretical and practical part of the study course, as well as to obtain the minimum number of required points. The subject grade is then formed in accordance with the grading table, and based on the total point sum from the required activities and final exam.	
19.				
	19.1.	Tests: points		
	19.2.	Final exam	Oral exam* * The oral exam includes acquired knowledge review from the theoretical part, as well as clinical practice, conducted via processing and presentation of an assigned clinical case.	min. – max. points 29-47
	19.3.	Active participation	Theoretical teaching* Clinical practice** * Attendance at theoretical lectures: 51-60% - 1 pt.; 61-70% - 2 pts.; 71-80% - 3 pts.; 81-90% - 4 pts.; 91-100% - 5 pts.; ** The clinical practice shall be conducted in the period of 5 days, 8 hours daily, with planned activities in the journal for clinical practice, for which the student shall receive points. attendance: 2 points, activities: 4 points	min – max points 1 – 5 points 30 – 48
20.	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)
			From 60 to 68 points	6 (six) (E)
			From 69 to 76 points	7 (seven) (D)
			From 77 to 84 points	8 (eight) (C)
			From 85 to 92 points	9 (nine) (B)
			From 93 to 100 points	10 (ten) (A)
21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation for the subject, teachers and associates participating in the teaching.	
22.	Literature			

	22.1.	Mandatory literature				
		No	Author	Title	Publisher	Year
		1.	MacDonald N, Oneschuk D, Hagen N.	Palliative medicine A case based manual, third edition	Oxford University Press	2012
		2.	Bruera E, Yennurajalingam S.	Oxford American Handbook of Hospice and Palliative Medicine	Oxford University Press	2011
	22.2.					
Number		Author	Title	Publisher	Year	
1.		Wrede- Seaman L.	Symptom Management Algorithms: A Handbook for Palliative Care	Oxford University Press	2008	
2.		Hanks G, Cherny IN, Christakis NA, Fallon M.	Oxford Textbook of Palliative Medicine (Oxford Textbook Series)	Oxford University Press	2011	

Number:69

1.	Subject	CLINICAL MICROBIOLOGY			
2.	Code	MED-625			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Microbiology and parasitology			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Sixth (VI)	Semester	Eleventh/twelfth (XI/XII)
7.	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Associate Prof. Maja Jurhar Pavlova, PhD, MD - responsible professor *Lectures held by the professors from the Department of Microbiology and parasitology			
9.	Language of the study	English			
10.	Preconditions for	Obtained credits (passed exams) from Microbiology and parasitology 1 and			

	<b>attending the classes and taking the subject's exam</b>	Microbiology and parasitology 2		
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"><li>- The relationship between the host and microorganisms</li><li>- Microbiological aspects of systemic infections</li><li>- Characteristics of infections occurring in hospital environment</li><li>- Diagnostic principles of infections</li><li>- Antimicrobial therapy, control and prevention of infections</li></ul>		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<ul style="list-style-type: none"><li>- Introduction to Clinical Microbiology and its significance</li><li>- The relationship between the microorganisms and the host with the resulting effects</li><li>- Etiological causes of infections localised on particular system of the human body and multisystemic infections with their clinical manifestations</li><li>- Characteristics of intrahospital infections, their discovery, treatment and surveillance</li><li>- Selection of appropriate sample for microbiological investigation, its transportation, processing and analyzing of the results</li><li>- Directions for right compsumption and surveillance of antimicrobial therapy in treatment of infections</li><li>- Control and prevention of infections in hospital surroundings and in the community</li></ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	<ul style="list-style-type: none"><li>- Interactive theoretical teaching</li><li>- Problem based learning</li><li>- Individual analyses of microbiological results</li><li>- Presentation and discussion on seminars</li></ul>		
15.	<b>Total available time frame</b>	30		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	10
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	5
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18.	<b>Requirements for signature</b>	In order to get a signature, the student should obtain minimum points in both theoretical and practical courses, and to present the seminar work. If the student has not obtained the minimum points in the continual assessments, he/she will be obligated to pass them before the final exam		
19.	<b>Methods of assessment</b>			
	19.1.	Tests: points		Continual assessment – one written
	19.2.	Seminar paper/project, written and oral presentation: points		Power point presentation of the seminar work Seminar: microbiological diagnosis of particular clinical

			entities/syndromes and analysis of microbiological results; recommendation for appropriate antimicrobial therapy of infections in hospital environment as well as in the community <b>The assessment of knowledge is descriptive</b>			
	19.3.	Final exam: points		Final exam: practical (processing of cases; microbiological analysis) A complete completed exam is a combination of 1 test and final exam		
20.	<b>Grading criteria (points/grade)</b>		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	<b>Methods of monitoring the quality of the teaching process</b>		Anonymous evaluation by students on the subject, teaching staff and associates participating in the teaching			
22.	<b>Literature</b>					
	22.1.	<b>Mandatory literature</b>				
		Number	Author	Title	Publisher	Year
		1.	Brooks G, Karen C. Carroll KC, Butel J, Morse S, Meizner T.	Jawetz, Melnick & Adelberg’s Medical Microbiology – 26 <sup>th</sup> Edition	Chicago: McGraw-Hill Education / Medical	2012
		2.	Greenwood D, Slack RCB, HHBarer Mr, Irving ML	Medical Microbiology: With STUDENTCONSULT online access (Greenwood,Medical Microbiology) 18 <sup>th</sup> Edition	Churchill Livingstone	2012
		3.	Gary W. Procop, Deirdre L. Church, Geraldine S. Hall; William M. Janda; Elmer W. Koneman; Paul C. Schreckenberger;	Koneman's Color Atlas and Textbook of Diagnostic Microbiology 7th Edition	Jones & Bartlett Learning	2016
	22.2.	<b>Additional literature</b>				



		Number	Author	Title	Publisher	year
		1.	Department's Teachers	Authorized lectures from the Department of microbiology and parasitology		

## ELECTIVE SUBJECTS

Number:1

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	ANATOMICAL FEATURES OF VERTEBROBASILAR SYSTEM			
2.	Code	MEDI 01			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Anatomy			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	II (second)	Semester	IV (fourth)
7.	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Associate professor Ace Dodevski, PhD, MD			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Anatomy 3 exam passed. The student can attend the final oral exam if he/she prepared an integrative seminar in a written form and presented it with oral presentation and interactive discussion of the colleagues and the responsible professor.			
11.	Subject program goals (competences) and study results:	The student should acquire basic knowledge about the morphological and topographic features of the vertebrobasilar system and its branches, as well as the clinical significance of their anatomical variations.			
12.	Subject content in details by chapters and units, with study results for every chapter	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>Morphological characteristics of the vertebrobasilar system and its branches</li> <li>Anatomical variations of the vertebrobasilar system</li> <li>Clinical significance of the variations of the vertebrobasilar system</li> </ul> <b>Practical course:</b> <ul style="list-style-type: none"> <li>Making dissection preparations of brain with vertebrobasilar system</li> <li>Morphometric analysis of anatomical brain preparations with vertebrobasilar system</li> <li>Comparative analysis of the morphometric characteristics of the vertebrobasilar system and its variations on anatomical preparations, CT and MRI images</li> <li>Practical teaching:                             <ul style="list-style-type: none"> <li>Selected part of vertebrobasilar system</li> </ul> </li> </ul>			
13.	Interconnection between subjects	Related to all subjects in the study program			

14.	Description of the subject's study and working methods in details	Interactive teaching, lectures, practical laboratory lessons, project assignments, independent assignments, home study				
15.	Total available time frame	30				
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5		
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10		
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours	15		
18.	Requirements for signature	In order to get a signature, the student needs to attend the theoretical, practical classes and seminars and earn a minimum number of points. In order to take the final exam, the student has to prepare a seminar paper in written form and make a power point presentation. The grade for the subject is formed according to the grade table, and based on the sum of the points from all activities, continuous tests and the final exam.				
19.	Methods of assessment					
	19.1.	Tests: points		15 - 30		
	19.2.	Seminar paper/project, written and oral presentation: points		15 - 30		
	19.3.	Final exam: points		21 - 40		
20.	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation of the subject and the teachers and associates who participate in teaching			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	George B, Bruneau M, Spetzler RF	Pathology and surgery around the vertebral artery	New York: Springer	2011
		2.	Berguer R	Function and surgery of the carotid and vertebral arteries	Philadelphia: Lippincott Williams & Wilkins	2013
		3.	Langdon JD.	Gray`s anatomy	London: Elsevier, Churchill - Livingstone	2005

	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Bradac GB	Cerebral angiography Normal anatomy and vascular pathology	New York: Springer	2014
		2.	Marinkovic S, Milisavljevic M, Antunovic V.	Brain and spinal cord arteries: Anatomical and clinical characteristics.	Beograd: Bit inzenjering	2001
		3.	Sachinder SH.	Extracranial carotid and vertebral artery disease.	New York: Springer	2018

Number:2

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	CLINICAL ANATOMY OF THE URINARY SYSTEM			
2.	Code	MEDI 02			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Anatomy			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Second (II)	Semester	Fourth (IV)
7	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Associate Professor Biljana Trpkovska, PhD, MD			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	<p>Passed Anatomy 2</p> <p>The student can attend the final oral exam if he/she prepared an integrative seminar in a written form and presented it with oral presentation and interactive discussion of the colleagues and the responsible professor.</p>			
11.	Subject program goals (competences) and study results:	<p>To provide knowledge about the morphological, and topographical characteristics and structure of the urinary system.</p> <p>To provide knowledge about anatomical and clinical aspects of the urinary system.</p>			
12.	Subject content in details by chapters and units, with study results for every chapter	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>Morphological, topographic characteristics, structure, and clinical knowledge of the kidneys.</li> <li>Morphological, topographic characteristics, structure, and clinical knowledge of the urinary tract.</li> <li>Anatomical structures, internal macrostructure, and microstructure of the kidneys.</li> </ul>			

		<ul style="list-style-type: none"><li>Anatomical and clinical knowledge of the ureter.</li><li>Anatomical and clinical knowledge of the glandule suprarenal.</li><li>Area of vascularization and innervation of the urinary system.</li></ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"><li>Presentation of the morphological, topographical characteristics and structure of the urinary system.</li><li>Seminars</li><li>Selected part of the urinary system.</li></ul>				
13.	Interconnection between subjects	Theoretical lessons, practical lessons, seminars				
14.	Description of the subject’s study and working methods in detail	15 hours of lectures, exercises, seminars 15 hours of home study				
15.	Total available time frame	30 hours				
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours			5
		16.2.	Practical lessons (laboratory, auditory), seminars, teamwork: hours			10
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours			15
18.	Requirements for signature	Active part in theoretical and practical lessons, seminars				
19.	Methods of assessment					
	19.1.	Tests: points				
	19.2.	Seminar paper/project, written and oral presentation: points Active participant/theoretical/ practical lessons			25-35, 20-40	
	19.3.	Final exam: points			15-25	
20.	Grading criteria (points/grade)		Up to 50 points		5 (five) (F)	
			From 51 to 60 points		6 (six) (E)	
			From 61 to 70 points		7 (seven) (D)	
			From 71 to 80 points		8 (eight) (C)	
			From 81 to 90 points		9 (nine) (B)	
			From 91 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation of the subject and the teachers and associates who participate in teaching			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year

		1.	Drake RL, Vogl AW, Mitchell AWM	Gray's Anatomy for Students	New York: Elsevier	2019
		2.	Halliday NL, Chung, HM.	Gross Anatomy	Pensilvania: Lippincott Williams & Wilkins	2023
	22.2.	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Moore KL.	Clinically oriented anatomy.	Baltimore: Lippincott Williams & Wilkins	2013
		2.	Paulsen F, Jens W.	Sobotta Atlas of Anatomy, Package, 16th ed.	Berlin: Urban & Fischer	2019

Number:3

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>CLINICAL ANATOMY OF THE SPINE</b>			
2.	<b>Code</b>	<b>MEDI 03</b>			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Anatomy			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Second (II)	Semester	Fourth (IV)
7.	<b>ECTS credits</b>	1			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Niki Matveeva, PhD, MD			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Completed course and passed exam in Anatomy 1. The student can attend the final oral exam if he/she prepared an integrative seminar in a written form and presented it with oral presentation and interactive discussion of the colleagues and the responsible professor.			
11.	<b>Subject program goals (competences) and study results:</b>	Obtaining wider knowledge about: anatomical variations and congenital malformations of the spine; normal spinal curvatures and their disorders; morphostructural and degenerative changes of the spine during the process of aging relevant for the clinical practice.			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	Ch I Anatomical variations and congenital malformations of the spine, clinical significance Ch II Normal spinal curvatures and spinal curvatures disorders			

		Ch III Morphostructural and degenerative changes of the spine during the process of aging relevant for the clinical practice.		
13.	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject's study and working methods in details	<b>Theoretical course:</b> <ul style="list-style-type: none"><li>Anatomical variations and congenital malformations of the spine</li><li>Normal spinal curvatures and their disorders</li><li>Morphostructural and degenerative changes of the spine during the process of aging relevant for the clinical practice (degenerative changes of the intervertebral discs, vertebral bodies and zygapophyseal joints, disc herniations and degenerative spinal stenosis).</li></ul> <b>Practical course:</b> <ul style="list-style-type: none"><li>presentation of the rich osseus collection of the Institute</li><li>case presentations of patients who underwent MR examinations of the spine</li></ul> <b>Seminar work:</b> chosen parts of the theoretical course <b>Methods of studying:</b> interactive theoretical lectures and practical lectures and integrative seminars		
15.	Total available time frame	30 classes		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	Practical lectures- 10
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18	Requirements for signature	In order to get a signature, the student is obligated to attend all the lectures (theoretical and practical), and seminars for which the student earns certain minimum number of points.		
19	Methods of assessment			
	19.1.	Tests: points	/	
	19.2.	Seminar paper/project, written and oral presentation: points	min.-max. 25-45	
	19.3.	Final exam: points	Oral exam scores	min-max 26- 55
20	Grading criteria (points/grade)	Up to 59 points	5 (five) (F)	

		From 60 to 68 points	6 (six) (E)			
		From 69 to 76 points	7 (seven) (D)			
		From 77 to 84 points	8 (eight) (C)			
		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process	After the completion of the study program of the elective subject/course, an anonymous evaluation is being performed.				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Moore KL.	Clinically oriented anatomy.	Baltimore: Lippincott Williams & Wilkins	2023
		2.	Drake RL, Vogl AW, Mitchell AWM	Gray`s Anatomy for Students	New York: Elsevier	2019
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
1.		Bogduk N.	Clinical Anatomy of the Lumbar Spine and Sacrum	Edinburgh-New York: Elsevier-Churchill Livingstone	2005	

Number:4

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>CLINICAL ANATOMY OF THE DIGESTIVE SYSTEM</b>			
2.	<b>Code</b>	<b>MEDI 04</b>			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Anatomy			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Second (II)	Semester	Fourth (IV)
7	<b>ECTS credits</b>	1			



8.	Professor (when more professors, responsible professor is assigned)	Assoc. Prof. Elizabeta Chadikovska, PhD, MD		
9.	Language of the study	English		
10.	Preconditions for attending the classes and taking the subject's exam	Passed exam Anatomy 2. In order to take the final exam, the student has to prepare a seminar paper in written form and make a power point presentation.		
11.	Subject program goals (competences) and study results:	Objectives of the subject program (competencies): <ul style="list-style-type: none"><li>• Study of the macroscopic structure of the human body</li><li>• Study of the organs that are part of the digestive system</li><li>• Clinical significance of the digestive system</li><li>• • Use of professional terminology</li></ul>		
12.	Subject content in details by chapters and units, with study results for every chapter	Content of the subject program: Theoretical course: <ul style="list-style-type: none"><li>• Importance of digestive system</li><li>• Morphological characteristics of the organs of the digestive system</li><li>• Ratios of the organs of the digestive system</li><li>• Vascularization and innervation of organs from the digestive system</li><li>• The digestive system and clinical connection;</li></ul> Practical course: <ul style="list-style-type: none"><li>• Presentation of an organ from the digestive system;</li><li>• Seminar work: for a selected part of the digestive system.</li></ul>		
13.	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject's study and working methods in details	Interactive teaching, lectures, practical laboratory lessons, project assignments, independent assignments, home study		
15.	Total available time frame	30 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18	Requirements for signature	In order to get a signature, the student needs to attend the theoretical, practical classes and seminars and earn a minimum number of points.		
19	Methods of assessment			
	19.1.	Tests: points		Min. 15- max. 25
	19.2.	Seminar paper/project, written and oral presentation: points		Min. 25- max. 35

	19.3.	Final exam: points			Theory 10-20 Practical part 10-20	
20	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process Student anonymous evaluation for the subject, teachers and associates participating in the teaching.		Student anonymous evaluation for the subject, teachers and associates participating in the teaching.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Drake RL, Vogl AW, Mitchell AWM	Gray`s Anatomy for Students	New York: Elsevier	2019
		2.	Halliday NL,Chung, HM.	Gross Anatomy	Pensilvania: Lippincott Williams & Wilkins	2023
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Moore KL.	Clinically oriented anatomy.	Baltimore: Lippincott Williams & Wilkins	2013
		2.	Paulsen F, Jens W.	Sobotta Atlas of Anatomy, Package, 16th ed.	Berlin: Urban & Fischer	2019

Number:5

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
<b>1.</b>	<b>Subject</b>	<b>COMPLEMENTARY MEDICINE</b>
<b>2.</b>	<b>Code</b>	<b>MEDI 05</b>
<b>3.</b>	<b>Study program</b>	General Medicine
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of anesthesiology with reanimation

5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Sixth (VI)	Semester	Eleventh (XI)
7	<b>ECTS credits</b>	1			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Jasminka Nancheva PhD, MD			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Completed course in Anesthesiology and reanimation. In order to take the exam, the student needs to attend the theoretical, practical classes and seminars			
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>Introduces the student to the alternative treatment techniques of the allopathic techniques from Western medicine, which he studies with the agricultural ones during his studies.</li> <li>The student should become familiar with the basic principles of traditional (Chinese) theories of the mechanism of action of acupuncture, more precisely understanding the methodology of acupuncture as a traditional method in the symptoms and therapy of diseases.</li> <li>The student should gain knowledge of the basic practical knowledge in the acupuncture technique.</li> <li>The student should become familiar with the basic laws and principles of homeopathic treatment, the methodology of taking the homeopathic anamnesis as a supplement to the allopathic (western) anamnesis and prescribing therapy.</li> <li>The student should acquire knowledge about the use of acute homeopathic medicines in everyday medicine.</li> <li>The student should gain knowledge of the basic practical in taking the homeopathic interview. Using a repertorium (computer).</li> </ul>			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ol style="list-style-type: none"> <li>Acupuncture <ul style="list-style-type: none"> <li>Modern (scientific) and traditional (Chinese) theories of the mechanism of action of acupuncture.</li> <li>Meridians and acupuncture points</li> <li>Relationship between acupuncture points and muscles</li> <li>Electrotherapy, electropuncture, electroacupuncture</li> <li>Acupuncture therapy by systems</li> </ul> </li> <li>Homeopathy <ul style="list-style-type: none"> <li>Laws and principles of homeopathic treatment</li> <li>Three levels of the human being</li> <li>The concept of vital force</li> <li>Basic laws of homeopathic treatment</li> <li>Dynamic interaction of diseases</li> <li>Basics of homeopathic analysis</li> <li>Prescribing medicines (acute homeopathic medicines)</li> </ul> </li> </ol> <b>Practical course:</b>			

		• Mastering clinical skills and practical application of acquired theoretical knowledge of acupuncture and homeopathy.				
13.	Interconnection between subjects	Related to all subjects in the study program				
14.	Description of the subject’s study and working methods in details	Interactive teaching, seminars, practical trainings				
15.	Total available time frame	30 hours				
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5 hours		
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10hours		
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours	15 hours		
18	Requirements for signature	In order to get a signature, the student needs to attend the theoretical, practical classes and seminars and earn a minimum number of points.				
19	Methods of assessment					
	19.1.	Tests: points			18 - 30	
	19.2.	Seminar paper/project, written and oral presentation: points			8 - 12	
	19.3.	Final exam: points			28 - 40	
20	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Continuous evaluation through the whole process of teaching (theoretical-interactive and practical). Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities.			
22.	Literature					
		Mandatory literature				
		Number	Author	Title	Publisher	Year
	22.1.	1.	Kaptchuk T.	The Web That Has No Weaver: Understanding Chinese Medicine.	Chicago: Mc Graw-Hill	2000

		2.	Deadman P, Baker K.	A Manual of Acupuncture	Los Angeles: Sung In Printing America Inc	1998
	<b>22.2</b>	Additional literature				
		1.	Vitulkas G	The doctrine of homeopathy	Advita	2005
		2.	Vitulkas G	Homeopathy – medicine for the new millennium	Aditiva	2007
		1.	Dervisevic E	Acupuncture	Beograd: Naucna kniga	2001

Number:6

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>DISASTER MEDICINE</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 06</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of anesthesiology with reanimation			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Sixth (VI)	Semester	Eleventh (XI)
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Kuzmanovska Biljana, MD, PhD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Passed exam in anesthesiology and reanimation. In order to take the final exam, the student needs to attend theoretical, practical teaching and seminars and win minimum points.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• Introduction with the concept of medicine in disaster conditions.</li> <li>• Prehospital organization of the medical and paramedical systems in major accidents.</li> <li>• Disaster assessment and mobilization of relief teams.</li> <li>• Pre-hospital care of victims, triage and first aid.</li> <li>• Chemical, biological and radiological decontamination.</li> <li>• Evacuation from the accident site.</li> <li>• Transport to the hospital.</li> <li>• Organization of hospital care for a large number of mass victims accidents.</li> </ul>			

12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Organization of prehospital medical and paramedical systems care of victims of mass accidents.</li> <li>• The role of medical teams in the first hour of the disaster, the establishment of emergency medical posts.</li> <li>• Initial Disaster Assessment and Triage: – <ul style="list-style-type: none"> <li>- in the first minutes after the disaster</li> <li>- within an hour of the disaster</li> <li>- in the period of 4-6 hours, first 24 hours</li> <li>- in the period from the second to the seventh day after the disaster.</li> </ul> </li> <li>• Assessment of the injured, primary examination, secondary examination, triage.</li> <li>• Algorithm for the procedures during the primary examination.</li> <li>• Trauma score, Glasgow coma score, pediatric trauma score.</li> <li>• Algorithm for triage of the injured requiring immediate treatment.</li> <li>• Algorithm for triage by secondary examination, secondary priority of procedures.</li> <li>• Algorithm for the triage of the injured with the possibility of a delayed procedure.</li> <li>• Algorithm for dead or extremely critical with possibility of dying.</li> <li>• Specifics of prehospital care during chemical and biological weapon attacks.</li> <li>• Biological and chemical decontamination.</li> <li>• Management of mental detheorized patients.</li> <li>• Specifics of pre-hospital care during nuclear disasters.</li> <li>• Radiological decontamination.</li> <li>• Transport (types)</li> </ul> <b>Practical lessons:</b> <ul style="list-style-type: none"> <li>• Practical exercises on phantom dolls - resuscitation according to ABC principles.</li> <li>• Immobilization of the spine.</li> <li>• Immobilization of limbs.</li> <li>• Primary hemostasis.</li> <li>• Transport of victims.</li> <li>• Placement of an intravenous line.</li> <li>• Procedures for decontamination of victims and personal protection.</li> </ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching (theoretical), demonstration, practical performing and acquiring skills, discussion with the teachers of the teaching, seminar paper.		
15.	<b>Total available time frame</b>	30 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5 hours

		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10 hours		
		16.3.	Practice: hours			
		17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours	15 hours		
18	Requirements for signature	In order to get a signature, the student needs to attend theoretical, practical teaching and seminars and win minimum points.				
19	Methods of assessment					
	19.1.	Tests: points	21 - 35			
	19.2.	Seminar paper/project, written and oral presentation: points	2 - 4			
	19.3.	Final exam: points	Oral	24 - 40		
20	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Ciottone GR.	Ciottone`s Disaster Medicine	New York: Mosby Elsevier	2006
		2.	Hogan DE.	Disaster Medicine	Philadelphia: LWW	2002
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Andonov V	Urgent medicine practical procedures	Laurens Coster	2001
		2.	Teaching materials on English for students prepared by the faculty			

Number:7

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>INTENSIVE CARE</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 07</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of anesthesiology with reanimation			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Tenth (X)
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Andrijan Kartalov, PhD, MD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Passed exam in anesthesiology and reanimation. To enter the exam, seminar work (writing text and presenting) is needed.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	Teaching goals: <ul style="list-style-type: none"> <li>• The student will be acquainted with the basics of intensive care, critically ill patients and the required skills for their treatment</li> <li>• Elements of cardio-pulmonary resuscitation</li> <li>• The student will be acquainted with the principles of care and intensive treatment of the critically ill patients and with the skills needed in intensive care medicine</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical and practical courses:</b> <ul style="list-style-type: none"> <li>• Intensive care medicine, organization of the intensive care unit, monitoring of the vital parameters</li> <li>• Critical conditions as a result of hypoxia</li> <li>• Critical conditions caused by circulatory disorders</li> <li>• Critical conditions with disorders of the body fluids homeostasis</li> <li>• Critical conditions and consciousness disorders</li> <li>• Critical conditions caused by digestive system disorders</li> <li>• Critical conditions caused by trauma</li> <li>• Critical conditions caused by head injuries</li> <li>• Critical conditions caused by chest/thorax injuries</li> <li>• Critical conditions caused by abdominal emergencies</li> <li>• Critical conditions caused by cardiac arrest in pregnant women</li> <li>• Critical conditions in cases of intoxications, burns, terminal extremes, drowning, electric shock</li> <li>• Artificial ventilation, central vein pathways, ports</li> </ul>			



13.	Interconnection between subjects		Related to all subjects in the study program			
14.	Description of the subject’s study and working methods in details		Interactive teaching, seminars, practical trainings			
15.	Total available time frame		30 hours			
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours		5 hours	
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours		10 hours	
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours		15 hours	
18	Requirements for signature		To obtain signature, active presence at theoretical course is obliged (12-20 points).			
19	Methods of assessment					
	19.1.	Tests: points			Written test Total 12-20 points	
	19.2.	Seminar paper/project, written and oral presentation: points			Seminar works Total 24- 40 points	
	19.3.	Final exam: points			Oral exam Total12-20 points  The final mark is formed by summarizing the points of certain activities.	
20	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Anonymous evaluation by the students of the subject, the teachers and the collaborators who participate in the education			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year

		1.	Marino PL	The ICU Book	Philadelphia: LWW	2013
		2.	Hall JB, Schmidt GA.	Critical care	Chicago: Mc Graw Hill, Medical	2006
		3.	Andrew D. Bersten, and Neil Soni	Oh's Intensive Care Manual	New York: Elsevier	2013
		Additional literature				
		Number	Author	Title	Publisher	Year
		1	Soljakova M. et al.	Anesthesiology and reanimation	Skopje: Biographica	2007

Number:8

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	PAIN THERAPY			
2.	Code	MEDI 08			
3.	Study program	General medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of anesthesiology with reanimation			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Fifth (V)	Semester	Tenth (X)
7.	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Jasminka Nancheva PhD. MD.			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Completed course in Anesthesiology and reanimation			

11.	<b>Subject program goals (competences) and study results:</b>	Introducing the treatment of acute and chronic pain. Students will learn how to treat pain when it is the primary symptom. They will be introduced with the treatment of painful syndrome, pain evaluation skills, early steps of pain scale, special treatment of various types of pain and proper use of analgesics in treatment of pain within general medicine.		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical and practical course:</b> Pain, clinical implications, types, segmental blocking pain, pain evaluation techniques, regime for pain treatment, strategy for treatment of acute pain, types of analgesics for system analgesia, back pain, the most common types of pain in medical practice, use of regional analgesia for the treatment of acute and chronic pain, treating chronic pain and techniques, blocks, method of application, palliative care and pain.		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Listening, demonstration, practical performance and skills, discussion and consultation with lecturers.		
15.	<b>Total available time frame</b>	15 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10 hours
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 hours
18	<b>Requirements for signature</b>	To obtain signature, active presence at theoretical lessons are obliged.		
19	<b>Methods of assessment</b>			
	19.1.	Tests: points	10 - 20	
	19.2.	Seminar paper/project, written and oral presentation: points	10 - 20	
	19.3.	Final exam: points	40 - 60	
20	<b>Grading criteria (points/grade)</b>		Up to 59 points	5 (five) (F)
			From 60 to 68 points	6 (six) (E)
			From 69 to 76 points	7 (seven) (D)
			From 77 to 84 points	8 (eight) (C)
			From 85 to 92 points	9 (nine) (B)
			From 93 to 100 points	10 (ten) (A)

21.	Methods of monitoring the quality of the teaching process	Continuous evaluation through the whole process of teaching (theoretical-interactive and practical). Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Morgan E, Mikail M, Marej M	Clinical Anesthesiology	Chicago: McGraw Hill	2013
		Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Soljakova M et al.	Pain in Anesthesiology and reanimation	Skopje: Biographica	2007
		2.	Teaching materials on English for students prepared by the faculty			

Number:9

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>ENZYMES – MARKERS FOR DIAGNOSIS AND PROGNOSIS OF DISEASES</b>			
2.	<b>Code</b>	MEDI 09			
3.	<b>Study Program</b>	General Medicine			
4.	<b>Institution (Unit, Institute, Chair, Department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Biochemistry and Clinical Biochemistry			
5.	<b>Degree of education (first or second cycle)</b>	Integrated 6 – year studies			
6.	<b>Academic year/semester</b>	Year	Second (II)	Semester	Fourth (IV)
7.	<b>ECTS credits</b>	1			
8.	<b>Professors (when more professors, responsible professor is assigned)</b>	Prof. Sonja Topuzovska, MD, PhD			
9.	<b>Language of the study</b>	English			

10.	<b>Preconditions for attending the classes and taking subject's exam</b>		Signature from Biochemistry 1 and Biochemistry 2. Before taking the final exam, the student should submit a seminar paper in a written form and prepare a PPT presentation.	
11.	<b>Subject program goals (competences) and study results:</b>		<b>Aims of the course program (competences):</b> <ul style="list-style-type: none"> <li>Teaching/studying of enzymes important for medical diagnostic practice</li> <li>Demonstration and practical work on methods for determination of enzyme activity</li> </ul>	
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>		<b>Contents of the course program:</b> <p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>Principles of enzymology</li> <li>Isoenzymes and their significance</li> <li>Methods for determination of enzymes</li> <li>Enzymes important for diagnosis and prognosis of cardiovascular diseases</li> <li>Enzymes important for diagnosis and prognosis of hepatic diseases</li> <li>Enzymes in the neonatal period</li> <li>Enzymes as tumor markers</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>Tests for determination of enzymes and isoenzymes, continual, discontinual, electrophoretic</li> </ul> <p><b>Seminar paper:</b> Selected chapters from enzymology</p>	
13.	<b>Interconnection between subjects</b>		Related to all other subjects	
14.	<b>Description of the subject's study and working methods in details</b>		Interactive teaching (theory), practical exercises, seminar paper	
15.	<b>Total available time frame</b>		30 hours	
16.	<b>Forms of teaching activities</b>	16.1	Lessons – theoretical lessons, hours	5 hours
		16.2	Practical lessons (laboratory, auditory), seminars, team work: hours	Exercises 5 hours Seminars 5 hours
		16.3	Practice: hours	
17.	<b>Other forms of activities</b>	17.1	Project tasks: hours	
		17.2	Individual tasks: hours	
		17.3	Studying at home: hours	15 hours
18.	<b>Requirements for signature</b>	<b>Conditional criteria:</b> In order to get a signature, a student needs to attend theoretical, practical classes and seminars as well as to obtain a minimum number of points.		

		Theoretical lessons 4 -10 points Practical lessons 4- 10 points				
19	Method of assessment					
	19.1	Tests: points	min.-max. 12 - 20			
	19.2	Seminar paper/project  (presentation: written and oral	Seminar paper points min.- max. points 25 - 35			
	19.3	Final exam: points	Oral exam points min.-max. 15 - 25			
20.	Grading criteria  (points/grade)		up to 59 points	5 (five) F		
			from 60 to 68 points	6 (six) E		
			from 69 to 76 points	7 (seven) D		
			from 77 to 84 points	8 (eight) C		
			from 85 to 92 points	9 (nine) B		
			from 93 to 100 points	10 (ten) A		
21.	Method of monitoring the quality of the teaching process		Students' anonymous evaluation of the subject, the teachers and the associates participating in the teaching process			
22.	Literature					
	22.1.	Mandatory literature				
			Author	Title	Publisher	Year
		1.	Copeland RA	Enzymes- A Practical Introduction to Structure, Mechanism, and Data Analysis. Second edition	London: Willey	2020
		2.	Hawcroft DM	Diagnostic enzymology	London: Willey	1987
	22.2.	Additional literature				
			Author	Title	Publisher	Year
1.		Majkic N.	Clinical enzymology	AID Praktikum	1993	

Number:10

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
<b>1.</b>	<b>Subject</b>	<b>LIPOPROTEINS – RISK FACTORS FOR DEVELOPMENT OF ATHEROSCLEROSIS</b>
<b>2.</b>	<b>Code</b>	<b>MEDI 10</b>

3.	<b>Study Program</b>	General Medicine			
4.	<b>Institution (Unit, Institute, Chair, Department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Biochemistry and Clinical Biochemistry			
5.	<b>Degree of education (first or second cycle)</b>	Integrated 6 – year studies			
6.	<b>Academic year/semester</b>	Year	Second (II)	Semester	Fourth (IV)
7.	<b>ECTS credits</b>	1			
8.	<b>Professors (when more professors, responsible professor is assigned)</b>	Prof. Danica Labudovikj, MD, PhD			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking subject's exam</b>	Signature from Biochemistry 1 and Biochemistry 2. Before taking the final exam, the student should submit a seminar paper in a written form and prepare a PPT presentation.			
11.	<b>Subject program goals (competences) and study results:</b>	<b>Teaching goals:</b> <ul style="list-style-type: none"> <li>To understand the role of lipoproteins, transport proteins and enzymes involved in the development of atherosclerosis, and the diseases that are a consequence of atherosclerosis: CAD, stroke, DVT;</li> <li>To become familiar with the electrophoretic methods for the separation of lipoproteins and to understand the principles of separation of HDL and LDL subclasses, apo(a) isoforms and the Western blott technique</li> </ul>			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Brief content</b> <b>Theoretical course:</b> <ul style="list-style-type: none"> <li>Classification and metabolism of plasma lipoproteins;</li> <li>Chylomicrons, VLDL, LDL and HDL; LDL and HDL subclasses CETP, LCAT;</li> <li>Lipoprotein (a) and apoprotein(a) phenotypes;</li> <li>Clinical significance of lipoproteins in the development of: coronary artery disease, CAD, cerebrovascular diseases, diabetes, deep vein thrombosis.</li> </ul> <b>Practical teaching:</b> <ul style="list-style-type: none"> <li>3-30% gradient non-denaturing PAG electrophoresis for separation of HDL and LDL subclasses</li> <li>3-15-gradient SDS-PAG electrophoresis for</li> </ul>			

			separation of apoprotein(s) followed by Western blotting on nitrocellulose membrane, visualization by immunotechnique <b>Seminar work:</b> preparation of a seminar paper related to lipoproteins and a public presentation (PPT presentation) of the same and a discussion related to the seminar papers	
13.	Interconnection between subjects		Related to all other subjects	
14.	Description of the subject’s study and working methods in details		Interactive teaching (theory), practical exercises, seminar paper	
15.	Total available time frame		30 hours	
16.	Forms of teaching activities	16.1	Lessons – theoretical lessons, hours	5 hours
		16.2	Practical lessons (laboratory, auditory), seminars, team work: hours	10 hours
		16.3	Practice: hours	
17.	Other forms of activities	17.1	Project tasks:hours	
		17.2	Individual tasks: hours	
		17.3	Studying at home: hours	15 hours
18.	Requirements for signature	<b>Conditional criteria:</b> In order to get a signature, a student needs to attend theoretical, practical classes and seminars as well as to obtain a minimum number of points. Theoretical lessons 4 -10 points Practical lessons 4- 10 points		
19	Method of assessment			
	19.1	Tests: points	min.-max. 12 - 20	
	17.2	Seminar paper/project  (presentation: written and oral	min.- max. points 25 - 35	
	19.3	Final exam: points	min.-max. 15 – 25  The grade for the subject is obtained according to the grade table and based on the sum of points gained in all of the activities, continual assessment of knowledge and final exam.	
20.	Grading criteria  (points/grade)		up to 59 points	5 (five) F
			from 60 to 68 points	6 (six) E
			from 69 to 76 points	7 (seven) D
			from 77 to 84 points	8 (eight) C
			from 85 to 92 points	9 (nine) B



			from 93 to 100 points	10 (ten) A		
21.	Method of monitoring the quality of the teaching process		Students' anonymous evaluation of the subject, the teachers and the associates participating in the teaching process			
22.	Literature					
	22.1.	Mandatory literature				
			Author	Title	Publisher	Year
		1.	Dhalla NS, et all	Biochemistry of atherosclerosis	New York: Springer	2009
		2.	David M. Hawcroft	Diagnostic enzymology	London: Willey	1987
	22.2.	Additional literature				
		Author	Title	Publisher	Year	
1.		Dunbar BS, et all	Protein Blotting. A practical approach	Oxford University Press	1999	
		2.	Patel D.	Electrophoresis, Essential data	Chichester: Gel Wiley	1999

Number:11

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>SKIN MANIFESTATIONS OF INTERNAL ORGAN DISORDERS</b>			
2.	<b>Code</b>	<b>MEDI 11</b>			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University, Medical Faculty, Department of Dermatovenerology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year study			
6.	<b>Academic year/semester</b>	Year	Forth (IV)	Semester	Seventh (VII)
7.	<b>ECTS credits</b>	1			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Suzana Nikolovska, PhD, MD *teaching will be provided by the teachers from Department of Dermatovenerology			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Signature from the dermatovenerology course. The student can attend the final oral exam if he/she prepared an integrative seminar in a written form and presented it with oral presentation and interactive discussion of the colleagues and the responsible professor.			

11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• The student will acquire knowledge about the different types of skin changes that indicate the existence of systemic disease</li> <li>• The student will have the skills to recognize and define the skin changes associated with a systemic disease</li> <li>• The student will have the skills to create a logical sequence for the management of the associated systemic disease according to the type of skin changes</li> <li>• The student will be aware of the importance of recognising the skin changes that are markers of systemic disease in the patient</li> <li>• The student will be aware of the need for interdisciplinary cooperation with colleagues of other specialites</li> </ul>		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Cutaneous manifestations of endocrine diseases</li> <li>• Cutaneous manifestations of hematological diseases</li> <li>• Cutaneous manifestations of nephrological diseases</li> <li>• Cutaneous manifestations of cardiological and pulmonary diseases</li> <li>• Cutaneous manifestations of rheumatological diseases</li> <li>• Cutaneous markers of malignant solid tumors (paraneoplasia)</li> </ul> <b>Practical course:</b> Practicing the clinical skills and practical application of the acquired theoretical knowledge on real patients.		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching during lectures, problem based learning, writing seminar paper		
15.	<b>Total available time frame</b>	30 classes		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5 classes
		16.2.	Practical lessons Seminars	10 classes
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 classes
18	<b>Requirements for signature</b>	80% presence during theoretical and practical lessons		
19.	<b>Methods of assessment</b>			

	19.1.	Tests: points			/	
	19.2.	Seminar paper/project, written and oral presentation: points			40-60	
	19.3.	Final exam: points			11-40	
20.	Grading criteria (points/grade)			Up to 59 points	5 (five) (F)	
				From 60 to 68 points	6 (six) (E)	
				From 69 to 76 points	7 (seven) (D)	
				From 77 to 84 points	8 (eight) (C)	
				From 85 to 92 points	9 (nine) (B)	
				From 93 to 100 points	10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process			Students' anonymous evaluation of the course as well as teachers and assistants.		
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Wolf K, Johnson RA	Fitzpatrick's Color Atlas and Synopsis of Clinical Dermatology	Chicago: Mc Graw Hill	2009
		2.	Griffiths C, Barker J, BleikerT, Chalmers R, Creamer D	Rook's Text Book of Dermatology	New Jersey: John Wiley and Sons Ltd	2016
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
1.		Ancevski A, Gocev G, Pavlova Lj, Petrova N	Dermatovenerology	Skopje: Kultura	2005	

Number:12

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>BASIC IMMUNOGENETICS</b>			
2.	<b>Code</b>	<b>MEDI 12</b>			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Immunology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Second (II)	Semester	Fourth (IV)
7	<b>ECTS credits</b>	1			

8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Assistant Professor Meri Kirijas, PhD, MD - responsible professor *Members of the Department of immunology and Department of Human Genetics are involved		
9.	<b>Language of the study</b>	English		
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Passed exam Introduction to immunology. In order to take the exam, the student should obtain minimum points in both theoretical and practical courses, and to present a seminar paper;		
11.	<b>Subject program goals (competences) and study results:</b>	Students will be able to: <ul style="list-style-type: none"> <li>• Define the term immunogenetics</li> <li>• To describe the application of immunogenetics</li> <li>• To describe the characteristics of HLA</li> <li>• To analyze familial HLA genotype and haplotype</li> <li>• To understand the role of immunogenetic testing in the transplantation of organs and tissues</li> <li>• To understand the role of immunogenetic testing in the transplantation of hematopoietic stem cells</li> <li>• To understand the role of HLA in the development of autoimmune diseases</li> </ul>		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Major histocompatibility complex (MHC), organization of MHC class I and MHC class II</li> <li>• Immunological function of HLA molecules</li> <li>• Biological and clinical significance of HLA system</li> <li>• Immunogenetics and transplantation of solid organs</li> <li>• Immunogenetics and transplantation of hematopoietic stem cells</li> <li>• HLA and disease association</li> <li>• HLA antigens and antibodies</li> </ul> <b>Practical course:</b> <ul style="list-style-type: none"> <li>• Methods for HLA typing (PCR-SSP, PCR-SSOP, NGS)</li> <li>• Determination of anti-HLA antibodies</li> </ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Seminars, interactive lessons		
15.	<b>Total available time frame</b>	30 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15

18.	Requirements for signature	Student is required to attend the theoretical, practical classes and seminars				
19.	Methods of assessment					
	19.1.	Tests: points			12-20	
	19.2.	Seminar paper/project, written and oral presentation: points			36-60	
	19.3.	Final exam: points			12-20	
20	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation of the course and the teachers and collaborators participating in the teaching			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Li XC, Jevnikar AM	Transplant Immunology	Hoboken: Wiley Blackwell	2016
		2.	Klimov V	From basic to clinical immunology	New York: Springer	2019
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Sompayrac L.	How the immune system works, 6 <sup>th</sup> edition	New York: Wiley Blackwell	2019
		2.				
		3.				

Number:13

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
1.	<b>Subject</b>	<b>CLINICAL IMMUNOLOGY</b>
2.	<b>Code</b>	<b>MEDI 13</b>
3.	<b>Study program</b>	General medicine
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Immunology
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6 - year studies

6.	Academic year/semester	Year	Second (II)	Semester	Fourth (IV)
7	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Dejan Trajkov, MD, PhD			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Obtained signature from subject Introduction to immunology. In order to take the final exam, the student has to prepare a seminar paper in written form and make a power point presentation.			
11.	Subject program goals (competences) and study results:	Teaching goals: Educating students with immune disorders and the diseases caused by them			
12.	Subject content in details by chapters and units, with study results for every chapter	Brief content <b>Theoretical course:</b> <ul style="list-style-type: none"><li>• Infection and immunity</li><li>• Congenital and acquired deficiencies</li><li>• Allergic diseases</li><li>• Systemic immune diseases</li><li>• Organ-specific inflammatory diseases</li><li>• Transplantation of red organs</li><li>• Immunology of tumors</li><li>• Prevention and therapy of immunological diseases</li><li>• Diagnostic immunology</li></ul> <b>Practical course:</b> <ul style="list-style-type: none"><li>• Seminar paper</li></ul>			
13	Interconnection between subjects	Allows upgrading to specific areas of immunology			
14.	Description of the subject's study and working methods in details	Interactive lectures, practical exercises, seminars			
15.	Total available time frame	30 hours			
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours		5 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours		10 hours
		16.3.	Practice: hours		
17.	Other forms of activities	17.1.	Project tasks: hours		
		17.2.	Individual tasks: hours		
		17.3.	Studying at home: hours		15 hours
18.	Requirements for signature	Prerequisite criteria:			

		In order to get a signature, the student needs to attend the theoretical, practical classes and seminars and earn a minimum number of points.				
19.	<b>Methods of assessment</b>				<b>points</b>	
	19.1.	Tests: points		min.- max. 15-25 points		
	19.2.	Seminar paper/project, written and oral presentation: points		min.- max. 25-35 points		
	19.3.	Final exam: points		Theoretical teaching      min.- max. 10-20 points  Practical teaching      10-20 points  The grade for the subject is formed according to the grade table, and based on the sum of the points from all activities, continuous knowledge checks and the final exam.		
20	<b>Grading criteria (points/grade)</b>		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	<b>Methods of monitoring the quality of the teaching process</b>		Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities			
22.	<b>Literature</b>					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Chapel H, Haeney M, Misbah S, Snowden N	Essentials of Clinical Immunology	New York: Wiley Blackwell	2006
		2.	Rich RR. et al.	Clinical immunology, principles and practice, second edition	Maryland Heights: Mosby	2001
	22.2.	Additional literature				
	Number	Author	Title	Publisher	year	

		1.	Sompayrac L.	How the immune system works, 6 <sup>th</sup> edition	New York: Wiley Blackwell	2019
		2.	Ljaljevic J, et al.	Clinical imunology	Beograd: Sezam Medico	2002

Number:14

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	THE SCIENTIFIC WORK - TO WRITE AND PUBLISH			
2.	Code	MEDI 14			
3.	Study program	General medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Immunology			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Third (III)	Semester	Fifth (V)
7	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Dejan Trajkov, MD, PhD			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Obtained signature from subject Basics in scientific work. In order to take the final exam, the student has to prepare a seminar paper in written form and make a power point presentation.			
11.	Subject program goals (competences) and study results:	Teaching goals: <ul style="list-style-type: none"><li>• To recognize and use a scientific way of thinking</li><li>• To know what scientific thinking is</li><li>• To use scientific information</li><li>• To make a classification of scientific works</li><li>• To submit a scientific paper</li><li>• To present a scientific paper</li></ul>			
12.	Subject content in details by chapters and units, with study results for every chapter	Brief content <b>Theoretical course:</b> <ul style="list-style-type: none"><li>• Searching literature data</li><li>• Computer analysis of highly similar papers</li><li>• Measuring scientific contribution with the Publish or perish program</li><li>• Preparation of original paper</li><li>• Preparation of a review paper</li><li>• Preparing a case report</li></ul>			



		<b>Practical course:</b> <ul style="list-style-type: none"><li>• Presentation of an original paper</li><li>• Presentation of a review paper</li><li>• Presenting a case report</li></ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject’s study and working methods in details</b>	Interactive lectures, practical exercises, seminars		
15.	<b>Total available time frame</b>	30 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10 hours
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 hours
18	<b>Requirements for signature</b>	In order to get a signature, the student needs to attend the theoretical, practical classes and seminars and earn a minimum number of points.		
19	<b>Methods of assessment</b>			<b>points</b>
	19.1.	Tests: points		min.- max. 15-25 points
	19.2.	Seminar paper/project, written and oral presentation: points		min.- max. 25-35 points
	19.3.	Final exam: points		min.- max. Theoretical course 10-20 points Practical course 10-20 points  The grade for the subject is formed according to the grade table, and based on the sum of the points from all activities, continuous knowledge checks and the final exam.
20	<b>Grading criteria (points/grade)</b>		Up to 59 points	5 (five) (F)
			From 60 to 68 points	6 (six) (E)
			From 69 to 76 points	7 (seven) (D)
			From 77 to 84 points	8 (eight) (C)
			From 85 to 92 points	9 (nine) (B)
			From 93 to 100 points	10 (ten) (A)
21.	<b>Methods of monitoring the quality of the teaching process</b>	Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities		
22.	<b>Literature</b>			

	<b>22.1.</b>	<b>Mandatory literature</b>				
		Number	Author	Title	Publisher	Year
		1.	Matko Marusic	Introduction to scientific work in medicine	Zagreb: Medicinska naklada	2019
	<b>22.2.</b>	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Spiroski M.	The scientific paper - to write and publish	Skopje: Institute for immunobiology and human genetics,	2002

Number:15

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>CLINICAL NUTRITION</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 15</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Internal Medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Fourth (IV)	Semester	Seventh (VII)
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Associate. Prof. Kalina Grivcheva Stardelova, MD, PhD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: None In order to enter the final exam, a student is required to attend the practical and lecture classes and to obtain a minimum score.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	The subject program goals is to increase the student's awareness of the contribution of ultrasound within the general clinical picture, and to introduce the student to its enormous potential  At the end, students will have basic knowledge of ultrasound findings in same pathological conditions of the abdominal organs (liver, gallbladder, bile ducts, pancreas, spleen, kidneys and large vessels).			
<b>12.</b>	<b>Subject content in details by chapters</b>	Theoretical lectures: 1. Indications for Parenteral Nutrition			

	and units, with study results for every chapter	2. Indications for Enteral Nutrition. 3. Nutritional screening 4. Nutrition in ICU 5. Nutrition in IBD 6. Nutrition in Liver Disease and acute Pancreatitis  Practical lectures: Nutrition screening and calculations for caloric needs in different conditions and diseases		
13	Interconnection between subjects	Clinical malnutrition is risk factor in treatment of the patients. Recognize patients who are under the risk ant theirs treatment essential in the daily practice of physicians, including general practitioners, internal medicine specialists, gastroenterohepatologists, etc.		
14.	Description of the subject’s study and working methods in details	Theoretical (interactive) teaching during the lectures and participation in the daily work of the Department of Clinical Nutrition in Clinic for Gastroenterohepatology and ultrasound examination of the patients		
15.	Total available time frame	30 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	5
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18	Requirements for signature	In order to obtain a signature and to enter the final exam, a student is required to attend the practical and lecture classes and to obtain a minimum score.  Active participation (points) min – max Theoretical course 20-24 Practical course 20-24		
19	Methods of assessment			
	19.1.	Tests: points		
	19.2.	Seminar paper/project, written and oral presentation: points		
	19.3.	Final exam: points	20-52	
20	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)
			From 60 to 68 points	6 (six) (E)
			From 69 to 76 points	7 (seven) (D)

		From 77 to 84 points	8 (eight) (C)				
		From 85 to 92 points	9 (nine) (B)				
		From 93 to 100 points	10 (ten) (A)				
21.	Methods of monitoring the quality of the teaching process	Student anonymous evaluation of the subject, the teacher and collaborators participating in the teaching					
22.	Literature						
	22.1.	Mandatory literature					
		Number	Author	Title	Publisher	Year	
		1.	Group of authors	Blue book - ESPEN Course Book, 2nd Edition	ESPEN Course Book, 2nd Edition	2023	
		2.					
	22.2.	Additional literature					
		Number	Author	Title	Publisher	year	
		1.	Teaching materials on English for students prepared by the faculty				
		2.	Mazur EE, Litz NA	Lutz's Nutrition and Diet Therapy	Philadelphia: FA Davis Company	2108	

Number:16

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>ELECTROCARDIOGRAPHY</b>			
2.	<b>Code</b>	<b>MEDI 16</b>			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Internal Medicine			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year study			
6.	<b>Academic year/semester</b>	Year	Fourth (IV)	Semester	Eighth (VIII)
7.	<b>ECTS credits</b>	1			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Lidija Poposka, MD, PhD			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	To pass Clinical examination exam. In order to enter the final exam, the student is required to attend the theoretical and practical course.			

11.	<b>Subject program goals (competences) and study results:</b>	The major aim of the course (competences): <ul style="list-style-type: none"> <li>• To learn how to make a quality electrocardiogram</li> <li>• To learn how to recognize a normal electrocardiogram</li> <li>• To recognize essential disorders in conduction of impulses</li> <li>• To recognize atrial or ventricular arrhythmia</li> <li>• To recognize myocardial ischemia/ infarction</li> <li>• To recognize electrocardiographic indexes of structural cardiac disorders</li> <li>• To recognize rhythm on electro-stimulator</li> <li>• To recognize conditions that require urgent treatment</li> </ul>		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Electrical system of conducting and cardiac electro physiology</li> <li>• Basic principles of electrocardiography and electrocardiogram (ECG paper, measuring, heart frequency, electrical axis, source of mistakes during the making of ECG)</li> <li>• Normal electrocardiogram, access to interpreting</li> <li>• Normal sinus rhythm and sinus rhythms</li> <li>• Disorders in conducting impulses</li> <li>• Rhythm disorders               <ul style="list-style-type: none"> <li>- Atrial</li> <li>- Junctional</li> <li>- Ventricular</li> </ul> </li> <li>• Myocardial ischemia and infarction</li> <li>• Atrial and ventricular loading</li> </ul> <b>Practical course:</b> Exercising and interpreting of an electrocardiogram		
13	<b>Interconnection between subjects</b>	Electrocardiography is a skill that is necessary from the level of a general practitioner to the level of a subspecialist internist, anesthesiologist, cardiologist.		
14.	<b>Description of the subject's study and working methods in details</b>	Theoretical (interactive) teaching during the lectures and exercises (practical teaching)		
15.	<b>Total available time frame</b>	30 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons - interactive, hours	10
		16.2.	Practical lessons, team work: hours	5
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18.	<b>Requirements for signature</b>	In order to obtain a signature the student is required to attend the practical and lecture classes and to obtain a minimum score.		
19	<b>Methods of assessment</b>			

	19.1.	Tests: points	12-20 points			
	19.2.	Activity	18-30 points			
	19.3.	Final exam: points	30-50 points The grade for the course is formed according to the grading table, based on the sum of the points from all the activities, and the continuous checks			
20	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process	Student anonymous evaluation of the subject, the teacher and collaborators participating in the teaching process				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Loscalzo J. et al.	Harrison`s Principles of Internal Medicine 21th edition	Chicago: McGraw Hill	2022
		2.	Goldman L, Ausiello D.	Goldman-Cecil Medicine, 27 <sup>th</sup> edition	New York:Elsivier	2023
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Georgievska Ismail Lj, Poposka L, Trajkov I, Gjorgov N.	Electrocardiography	(COIBSS. mk – ID71834122):	2008

Number:17

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
1.	<b>Subject</b>	<b>ADOLESCENT RHEUMATOLOGY</b>
2.	<b>Code</b>	<b>MEDI 17</b>
3.	<b>Study program</b>	General Medicine

4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Internal Medicine			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Fourth (IV)	Semester	Eighth (VIII)
7	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Ljubinka Damjanovska Krstikj, MD, PhD			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	To pass Clinical examination exam. In order to enter the final exam, the student is required to attend the theoretical and practical course.			
11.	Subject program goals (competences) and study results:	To disseminate knowledge about rheumatologic condition in young people			
12.	Subject content in details by chapters and units, with study results for every chapter	Subject content: <b>Theoretical course:</b> <ul style="list-style-type: none"><li>Juvenile idiopathic arthritis</li><li>Connective tissue diseases</li><li>Autoinflammatory disorders</li></ul> <b>Practical course:</b> <ul style="list-style-type: none"><li>Mastering of clinical skills and practical application of the acquired theoretical knowledge.</li></ul>			
13.	Interconnection between subjects	Related to all subjects in the study program			
14.	Description of the subject's study and working methods in details	Interactive teaching, lectures, practical laboratory lessons, project assignments, independent assignments, home study			
15.	Total available time frame	30 hours			
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5	
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10	
		16.3.	Practice: hours		
17.	Other forms of activities	17.1.	Project tasks: hours		
		17.2.	Individual tasks: hours		
		17.3.	Studying at home: hours	15	
18	Requirements for signature	In order to obtain a signature the student is required to attend the practical and lecture classes and to obtain a minimum score.			
19	Methods of assessment				
	19.1.	Tests: points			15 - 30
	19.2.	Seminar paper/project, written and oral presentation: points			15 - 30

	19.3.	Final exam: points			20 - 40	
20	Grading criteria (points/grade)			Up to 59 points	5 (five) (F)	
				From 60 to 68 points	6 (six) (E)	
				From 69 to 76 points	7 (seven) (D)	
				From 77 to 84 points	8 (eight) (C)	
				From 85 to 92 points	9 (nine) (B)	
				From 93 to 100 points	10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process					
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Sawhney S, Aggarwal A.	Pediatric rheumatology: A Clinical Viewpoint	New York: Springer Link	2017
		2.	Petty et al.	Textbook of pediatric rheumatology, 8 <sup>th</sup> . ed	New York: Springer	2020
		Additional literature				
	22.2.	Number	Author	Title	Publisher	Year
		1.	Loscalzo J. et al.	Harrison`s Principles of Internal Medicine 21th edition	Chicago: McGraw Hill	2022

Number:18

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>ABDOMINAL ULTRASOUND</b>			
2.	<b>Code</b>	<b>MEDI 18</b>			
3.	<b>Study program</b>	General medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Internal Medicine			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Fourth (IV)	Semester	Seventh (VII)
7	<b>ECTS credits</b>	1			



8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Assistant Prof. Beti Todorovska, MD, PhD		
9.	<b>Language of the study</b>	English		
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	To pass Clinical examination exam. In order to enter the final exam, the student is required to attend the theoretical and practical course and to obtain a minimum score.		
11.	<b>Subject program goals (competences) and study results:</b>	The subject program goals is to increase the student's awareness of the contribution of ultrasound within the general clinical picture, and to introduce the student to its enormous potential At the end, students will have basic knowledge of ultrasound findings in same pathological conditions of the abdominal organs (liver, gallbladder, bile ducts, pancreas, spleen, kidneys and large vessels).		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Indications for ultrasound examination.</li> <li>• Basic Physical and Technical Principles (Ultrasound Techniques, Scanning Protocol, Sonographic Topography) of abdominal ultrasound</li> <li>• Examination of the hepatobiliary system, pancreas, spleen, kidneys and large vessels</li> <li>• Clinical importance of abdominal ultrasound in daily routine</li> </ul> <b>Practical course:</b> <ul style="list-style-type: none"> <li>• Performing ultrasound examination of of the hepatobiliary system, pancreas, spleen, kidneys and large vessels.</li> <li>• Interpretation of ultrasound findings.</li> </ul>		
13	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Theoretical (interactive) teaching during the lectures and participation in the daily work of the Department of Ultrasound at the UC for Gastroenterohepatology and ultrasound examination of the patients		
15.	<b>Total available time frame</b>	30 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18	<b>Requirements for signature</b>	In order to obtain a signature the student is required to attend the practical and lecture classes and to obtain a minimum score. Theoretical course 20-24 points		

		Practical course	20-24 points
<b>19</b>	<b>Methods of assessment</b>		
	19.1.	Tests: points	
	19.2.	Seminar paper/project, written and oral presentation: points	
	19.3.	Final exam: points	20 - 52
<b>20</b>	<b>Grading criteria (points/grade)</b>		
		Up to 59 points	5 (five) (F)
		From 60 to 68 points	6 (six) (E)
		From 69 to 76 points	7 (seven) (D)
		From 77 to 84 points	8 (eight) (C)
		From 85 to 92 points	9 (nine) (B)
		From 93 to 100 points	10 (ten) (A)
<b>21.</b>	<b>Methods of monitoring the quality of the teaching process</b>		Student anonymous evaluation of the subject, the teacher and collaborators participating in the teaching
<b>22.</b>	<b>Literature</b>		
	<b>22.1.</b>	Mandatory literature	
		Number	Author
		Title	Publisher
		Year	
		1.	Schmidt G
		2.	Bates JA
	<b>22.2.</b>	3.	Dietrich CF, Serra C, Jedrzejczyk M
		Additional literature	
		Number	Author
		Title	Publisher
		Year	
		1.	Loscalzo J. et al.

Number:19

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
<b>1.</b>	<b>Subject</b>	<b>CARDIAC EMERGENCIAS</b>
<b>2.</b>	<b>Code</b>	<b>MEDI 19</b>
<b>3.</b>	<b>Study program</b>	General Medicine

4.	<b>Institution (unit, institute, chair, department)</b>	St Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Internal Medicine			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Fourth (IV)	Semester	Eighth (VIII)
7.	<b>ECTS credits</b>	1			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Marija Vavlukis MD, PhD			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	<p>Passed exam of Clinical examination.</p> <p>In order to obtain a signature and to enter the final exam, a student is required to attend the practical and lecture classes and to obtain a minimum score.</p>			
11.	<b>Subject program goals (competences) and study results:</b>	To gain knowledge of life-threatening cardiological conditions, the basic principles of their recognition, diagnosis, initial treatment and basic knowledge of further treatment.			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Acute heart failure (pulmonary oedema and cardiogenic shock)</li> <li>• Aortic dissection</li> <li>• Pericardial effusion and tamponade, electromechanical dissociation</li> <li>• Ventricular tachycardia, polymorphic ventricular tachycardia, ventricular fibrillation</li> <li>• Cardio-pulmonary resuscitation</li> <li>• Supraventricular tachycardia and atrial fibrillation with fast ventricular rate</li> <li>• Hypertensive urgency and hypertensive emergency</li> <li>• Pulmonary thromboembolism and acute right ventricular failure</li> <li>• Hyperkalemia</li> <li>• Digoxin toxicity</li> </ul> <p><b>Practical course:</b></p> <p>Practical teaching will take place through case studies of clinical practice, for each of the pathologies covered in the theoretical part, with interactive participation.</p> <p><b>Seminar work:</b></p> <p>Each student will process a specific clinical case, with critical analysis and use of literature data, and present it publicly.</p>			

13	Interconnection between subjects	Related to all subjects in the study program				
14.	Description of the subject’s study and working methods in details	Theorethical (interactive) teaching during the lectures and exercises (practical teaching)				
15.	Total available time frame	30 hours				
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons -interactive, hours	5		
		16.2.	Practical lessons, team work: hours	10		
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours	15		
18	Requirements for signature	In order to obtain a signature the student is required to attend the practical and lecture classes and to obtain a minimum score.				
19	Methods of assessment					
	19.1.	Activity and participation		18-24 points theory 18-24 points practical lessons		
	19.2.	Seminar paper/project,		6-22 points		
	19.3.	Final exam: points		18-30 points  The grade for the course is formed according to the rating table, based on the sum of the points from all the activities, and the continuous checks		
20	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process	Student anonymous evaluation of the subject, the teacher and collaborators participating in the teaching process				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Marco Tubaro M (ed.) et al.	The ESC Textbook of Intensive and Acute Cardiovascular Care (3 edn)	Oxford Academic	2021
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year

		1.	Loscalzo J. et al.	Harrison's Principles of Internal Medicine 21th edition	Chicago: McGraw Hill	2022
		2.	Teaching materials on English for students prepared by the faculty			

Number:20

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>INTERVENTIONAL CARDIOLOGY</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 20</b>			
<b>3.</b>	<b>Study program</b>	General medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Internal Medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	IV	Semester	VIII
<b>7.</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Sashko Kedev MD, PhD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	<p>To pass Clinical examination exam. In order to get to the final evaluation, it's necessary for the student to be present at the theoretical and practical lessons and gain minimal points from both. To get to the final exam the student must do a PowerPoint presentation on a designated topic.</p> <p>Activity and participation theoretical course 18-24 points practical course 18-24 points</p>			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	To gain theoretical and practical knowledge in Interventional cardiology, and gain insight into all minimally invasive, catheter-based techniques to diagnose and treat coronary artery disease, peripheral vascular disease, structural heart disease and valvular heart disease. Students will be provided with the latest and up to date practice, knowledge, and skills necessary in the field of interventional cardiology and will find out about future perspectives.			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course and practical course:</b> <ul style="list-style-type: none"> <li>• Foundations of interventional cardiovascular medicine</li> <li>• Percutaneous access for cardiovascular interventions</li> <li>• Diagnostic cardiovascular modalities and their application</li> <li>• Percutaneous coronary interventions, materials and stents</li> </ul>			

		<ul style="list-style-type: none"><li>Interventions for ST-segment elevation acute myocardial infarction</li><li>Complex coronary interventions</li><li>Solving complications in the cath lab</li><li>Structural heart interventions</li><li>Cardotid artery interventions</li><li>Subclavian, brachiocephalic and vertebral interventions</li><li>Interventions in the reno-visceral circulation</li><li>Peripheral arterial interventions</li><li>Concept, techniques and clinical effectiveness of renal nerve ablation in hypertension</li><li>Endovascular treatment of acute ischemic stroke</li></ul>		
13	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject’s study and working methods in details	Interactive studies, demonstration, gaining practical skills, discussions, and consultations with responsible teachers.		
15.	Total available time frame	30 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18	Requirements for signature	In order to obtain a signature the student is required to attend the practical and lecture classes and to obtain a minimum score. Theoretical course 8-24 points Practical course 8-24 points		
19	Methods of assessment			
	19.1.	Tests: points		
	19.2.	Seminar paper/project, written and oral presentation: points	6-22 points	
	19.3.	Final exam: points	18-30 points  The grade for the exam is formed according to the table of grades, and on the basis of the sum of points gained from all activities, assessments and final exam.	
20	Grading criteria (points/grade)	Up to 59 points	5 (five) (F)	
		From 60 to 68 points	6 (six) (E)	
		From 69 to 76 points	7 (seven) (D)	
		From 77 to 84 points	8 (eight) (C)	
		From 85 to 92 points	9 (nine) (B)	

		From 93 to 100 points	10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process	Anonymous evaluation from the students for the subject itself and the teachers involved in the classes.				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Joint authors.	PCR-EAPCI Textbook	European Society of cardiology	2023
		2.	Topol E.	Textbook of Interventional Cardiology	New York: Elsevier	2019
		3.	Emmanouil Brilakis E.	Manual of Percutaneous Coronary Interventions	New York: Elsevier	2020
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Kedev et al.	Minimalistic Approach for Transcatheter Aortic Valve Implantation (TAVI): Open Vascular Vs. Fully Percutaneous Approach.	Prilozi/Manu	2019
		2.	Kedev et al.	Safety and feasibility of transulnar catheterization when ipsilateral radial access is not available.	Catheterization and cardiovascular interventions	2014
		3.	Kedev et al.	Macedonia: coronary and structural heart interventions from 2010 to 2015.	Eurointervention	2017

Number:21

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>MODERN NON PHARMACOLOGICAL AND PHARMACOLOGICAL TREATMENT OF TYPE 2 DIABETES</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 21</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of internal medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	IV	Semester	VIII
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Tatjana Milenkovic, PhD, MD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	To pass Clinical examination exam. In order to get to the final evaluation, it's necessary for the student to be present at the theoretical and practical course and to prepare a seminar paper.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	Acquaintance with modern non-pharmacological and pharmacological treatment of type 2 diabetes The doctoral student will be able to apply the knowledge of diabetes treatment in the preparation of a scientific paper from this field, which is in development and has a large number of patients that enable a simpler preparation of a scientific paper, as well as the possibility of performing scientific research work in this area.			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>Nutrition for people with diabetes, carbohydrate counting and advanced carbohydrate counting for people on intensive insulin treatment</li> <li>Physical activity, types of physical activity, its controlled performance and benefit from it</li> <li>Education and self-control of people with diabetes, types, meaning and practical implementation</li> <li>Oral therapy – detailed familiarization with existing and new groups of drugs, their advantages, disadvantages, effectiveness in treatment</li> </ul>			



		<ul style="list-style-type: none"><li>• Insulin therapy, types of insulin, insulin regimens, indications for their use</li><li>• Individual work:</li><li>• Evaluation of scientific literature</li><li>• Seminars (2) on carbohydrate counting, daily caloric needs</li><li>• Consultations</li><li>• A small written paper by the doctoral student (seminar work)</li></ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"><li>• Daily caloric needs, determining a diet (creating an individual menu) for people with diabetes</li><li>• Practical self-control and therapy of diabetes - to live 3 days as a person with diabetes</li></ul>		
13.	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive lectures, monitoring of scientific literature, independent preparation of a seminar paper, independent preparation of daily caloric and carbohydrate needs for people with diabetes, to live as a person with diabetes.		
15.	<b>Total available time frame</b>	30 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18.	<b>Requirements for signature</b>	Regular monitoring of theoretical and practical teaching Independent preparation of a seminar paper		
19	<b>Methods of assessment</b>			
	19.1.	Tests: points	24-40	
	19.2.	Seminar paper/project, written and oral presentation: points	24-40	
	19.3.	Final exam: points	12-20	
20	<b>Grading criteria (points/grade)</b>		Up to 59 points	5 (five) (F)
			From 60 to 68 points	6 (six) (E)
			From 69 to 76 points	7 (seven) (D)
			From 77 to 84 points	8 (eight) (C)
			From 85 to 92 points	9 (nine) (B)
			From 93 to 100 points	10 (ten) (A)

21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation of the subject and the teachers and associates who participate in teaching		
22.	Additional literature				
22.1.	Mandatory				
	1.	White JR, PharmD PA	Guide to Medications for the Treatment of Diabetes Mellitus	American Diabetes Association	2021
	2.	Schroeder EB	Management of Type 2 Diabetes: Selecting Amongst Available Pharmacological Agents.	Available from: <a href="https://www.ncbi.nlm.nih.gov/books/NBK425702/">https://www.ncbi.nlm.nih.gov/books/NBK425702/</a>	2022
	3.	Holt RIG, Cockram C, Flyvbjerg A, Goldstein BJ (Editors)	Textbook of Diabetes, 5th Edition	Hoboken: Wiley-Blackwell	2017
22.2.	Additional				
	1.	American Diabetes Association	American Diabetes Association. Clinical Practice resommendation, 2013	American Diabetes Association	2013
	2.	Wolfsdorf JI, Editor	Intensive Diabetes Management, 5th Edition	American Diabetes Association	2012
	3.	American Diabetes Association and American Dietetic Association	Choose Your Foods-Exchange Lists for Diabetes	American Diabetes Association	2008

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>OCCUPATIONAL DISEASES AND WORK-RELATED DISEASES</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 22</b>			
<b>3.</b>	<b>Study program</b>	General medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Occupational Health			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Sixth (VI)	Semester	Eleventh (XI)
<b>7</b>	<b>ECTS credits</b>				
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Jordan Minov PhD, MD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	<p>Precondition for attending the classes: Signature for the subject Occupational Medicine</p> <p>In order to take the final exam, the student has to prepare a seminar paper in written form, make a Power point presentation and has to present the seminar paper orally.</p>			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>Studying the pathogenesis, diagnostics, treatment and prevention of occupational diseases and work-related diseases</li> <li>Case reports and demonstration of epidemiological and clinical research of the occupational diseases and work-related diseases</li> <li>Seminar work in occupational pathology</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>Occupational diseases and work-related diseases – definition, legislation, pathogenesis, diagnostics, treatment and prevention</li> <li>Occupational diseases and work-related diseases of the lungs</li> <li>Occupational diseases of the liver</li> <li>Occupational diseases of the locomotor system</li> <li>Occupational malignant neoplasm</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>Asthma related to work/occupational asthma – case report</li> <li>Lung diseases related to asbestos exposure – case report</li> <li>Occupational contact dermatitis – case report</li> <li>Occupational lead poisoning – case report</li> <li>Occupational hearing loss – case report</li> </ul> <p><b>Seminar papers</b></p>			

		<ul style="list-style-type: none"><li>• COPD related to occupational exposures</li><li>• Occupational zoonoses</li></ul>		
13	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject’s study and working methods in details	Interactive theoretical teaching, practice, seminars		
15.	Total available time frame	30 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10 hours
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 hours
18.	Requirements for signature	<b>Conditional criteria:</b> In order to get a signature, the student needs to attend the theoretical, practical lectures and seminars and earn a minimum number of points.		
19.	<b>Methods of assessment</b>			
	19.1.	Tests: points	Oral exam 15 – 25 points	
	19.2.	Seminar paper/project, written and oral presentation: points	Seminar paper 25-35 points	
	19.3.	Final exam: points	20 – 40 points  The grade for the subject is composed according to the grade table, based on the sum of the points from all activities, continuous tests and the final exam.	
20	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)
			From 60 to 68 points	6 (six) (E)
			From 69 to 76 points	7 (seven) (D)
			From 77 to 84 points	8 (eight) (C)
			From 85 to 92 points	9 (nine) (B)
			From 93 to 100 points	10 (ten) (A)
21.	Methods of monitoring the quality of the teaching process		Anonymous student evaluation of the course and the teachers and associates participating in the teaching.	
22.	Literature			

	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		2.	Minov J.	COPD and Occupational Exposures	New York: Nova Science Publishers, Inc.	2016
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Minov J.	Occupationally-related Diseases of Lung and Pleura	Skopje: Pristopi& Institut za medicina na trudot na R. Makedonija,	2009
		2.	Bislimovska Karadzinska J, Minov J, Risteska-Kuc S, Mijakoski D, Stoleski S.	Occupational Medicine	Medical Faculty, Skopje	2011

Number:23

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	Subject	<b>JOB STRESS AND BURNOUT</b>			
2.	Code	<b>MEDI 23</b>			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius, University in Skopje, Faculty of Medicine, Department of Occupational Medicine			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Sixth (VI)	Semester	Eleventh (XI)
7.	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Associate Prof. Dragan Mijakoski, PhD, MD			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Signature for the subject Occupational Medicine			
11.	Subject program goals (competences) and study results:	To obtain knowledge and skills for: application of basic principles for identification of workplace psychosocial hazards; analysis of job stress and burnout; development and application of methodology for analysis of workplace stress factors according to			

		Job Demands/Resources Model; development and conduction of workplace interventions towards prevention of adverse effects of workplace psychosocial hazards; and development and application of organisational interventions according to the principles of action research.		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Psychosocial aspects of work - basic concept and definitions</li> <li>• Importance of workplace psychosocial hazards</li> <li>• Analysis of the Job Demands/Resources Model of burnout</li> <li>• Job stress and burnout - definitions, epidemiological data, and adverse effects</li> <li>• Burnout vs. Job engagement</li> <li>• Importance of organizational culture and team work</li> <li>• Development and conduction of workplace interventions towards prevention of adverse effects of workplace psychosocial hazards</li> <li>• The role of action research in development and application of organisational interventions - epidemiological and case studies with evaluation of scientific literature in the field</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>• Development and application of methodology for analysis of workplace stress factors, job stress and burnout</li> <li>• Practical application of statistical methods for analysis of workplace stress factors, job stress and burnout and drawing relevant conclusions</li> <li>• Development of organisational interventions for reduction of job stress according to the principles of action research</li> </ul> <p><b>Seminar work:</b> Selected topics from the field of organizational psychology</p>		
13	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive lectures (theoretical course), practical lessons, seminar work		
15.	<b>Total available time frame</b>	30 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	/
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	/
		17.2.	Individual tasks: hours	/
		17.3.	Studying at home: hours	15

18	<b>Requirements for signature</b>		<p>In order to take a signature, the student has to attend theoretical lectures, practical lessons and seminars and to obtain minimum points for each activity.</p> <p>In order to attend the final exam, the student has to write a Seminar work in Word format and to create a Power point presentation as well as to have an oral presentation of the Seminar work.</p> <p>The grade for the subject is calculated using a table of grades, and according to the sum of points for each activity, continuous examinations, as well as final oral examination.</p>				
19	<b>Methods of assessment</b>						
	19.1.	Tests/active participation: points				Theoretical course 10-20 points Practical lessons 10-20 points	
	19.2.	Seminar paper/project, written and oral presentation: points				Seminar work 25-35 points	
	19.3.	Final exam: points				Oral examination 15-25 points	
20	<b>Grading criteria (points/grade)</b>			Up to 59 points		5 (five) (F)	
				From 60 to 68 points		6 (six) (E)	
				From 69 to 76 points		7 (seven) (D)	
				From 77 to 84 points		8 (eight) (C)	
				From 85 to 92 points		9 (nine) (B)	
				From 93 to 100 points		10 (ten) (A)	
21.	<b>Methods of monitoring the quality of the teaching process</b>			Anonymous student evaluation for the subject, and teachers and collaborators involved in the teaching process.			
22.	<b>Literature</b>						
	22.1.	<b>Mandatory literature</b>					
		Number	Author	Title	Publisher	Year	
		1.	Rom WN (ed.)	Environmental and Occupational Health (4 <sup>th</sup> ed.)	Boston: Lippincot & Williams,	2007	
		2.	Tulchinsky T, Varavikova E.	The New Public Health (3 <sup>rd</sup> ed.)	San Diego: Academic Press,	2014	
	22.2.	<b>Additional literature</b>					
		Number	Author	Title	Publisher	year	

		1.	Leka S, Griffiths A, Cox T, Institute of Work, Health & Organizations	Work Organization and stress: systematic problem approaches for employers, managers and trade union representatives	Geneva: World Health Organization (WHO)	2004
		2.	Sauter S, Murphy L, Colligan M, et al.	Stress at Work. DHHS (NIOSH) Publication No. 99-101	Cincinnati, OH:National Institute for Occupational Safety and Health (NIOSH)	1999
		3.	European Commission, Directorate- General for Employment and Social Affairs	Guidance on work-related stress. Spice of life or kiss of death?	Luxembourg: Office for Official Publications of the European Communities	2000
		4.	European Foundation for the Improvement of Living and Working Conditions	Work-related stress	Dublin: European Foundation for the Improvement of Living and Working Conditions	2010
		5.	Bakker AB, Leiter MP (eds.)	Work engagement: a handbook of essential theory and research	New York, NY: Psychology Press	2010
		6.	Karadzinska- Bislimovska J, Minov J, Risteska- Kuch S, Mijakoski D, Stoleski S.	Occupational Medicine	Skopje: UKIM	2011



<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>OCCUPATIONAL MALIGNANT NEOPLASMS</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 24</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Occupational Medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Sixth (VI)	Semester	Eleventh (XI)
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Associate Prof. Dr Sasho Stoleski			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Signature on the subject Occupational Medicine In order to take the final exam, the student has to prepare a seminar paper in written form, make a Power point presentation and has to present the seminar paper orally.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	To provide knowledge and skills for the application of the basic principles for the prevention of occupational malignant neoplasms, evaluation of the available literature in this area, contribution to the implementation of health interventions for the prevention of these diseases and evaluation of intervention programs in this area. The student will be able to acquire professional knowledge, but also basic knowledge for performing scientific research work and producing a scientific paper in this field.			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Brief content</b> <b>Theoretical course:</b> <ul style="list-style-type: none"> <li>Professional malignant neoplasms – definition, pathogenetic mechanisms, diagnostics and treatment</li> <li>Occupational carcinogens and carcinogenic risk (classification according to the International Agency for Research on Cancer - IARC)</li> <li>Occupational malignant diseases - prevention</li> <li>Occupational malignant neoplasms - clinical and epidemiological research</li> <li>Occupational malignant neoplasms - opportunities for health interventions</li> </ul> <b>Practical lessons:</b> <ul style="list-style-type: none"> <li>Occupational malignant neoplasms of the skin - case report</li> <li>Occupational malignant neoplasms of the lungs and pleura - case report</li> <li>Occupational malignant neoplasms of the upper respiratory tract - case report</li> </ul>			

		<ul style="list-style-type: none"><li>Occupational malignant neoplasms of the hematopoietic system - case report</li><li>Occupational malignant neoplasms of the gastrointestinal tract - case report</li><li>Occupational malignant neoplasms of the reproductive system - case report</li><li>Occupational malignant neoplasms of the endocrine system - case report</li></ul> <p><b>Seminar paper:</b> Selected topics in the field of occupational carcinogens and occupational malignant neoplasms</p>		
13	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject’s study and working methods in details	Interactive teaching (theoretical), practice, seminars		
15.	Total available time frame	30 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	/
		17.2.	Individual tasks: hours	/
		17.3.	Studying at home: hours	15
18	Requirements for signature	Conditional criteria: In order to get a signature, the student needs to attend the theoretical, practical lectures and seminars and earn a minimum number of points.		
19	Methods of assessment			
	19.1.	Tests: points	25-35	
	19.2.	Seminar paper/project, written and oral presentation: points	25-35	
	19.3.	Final exam: points	10-30 The grade for the subject is composed according to the grade table, based on the sum of the points from all activities, continuous tests and the final exam.	
20	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)
			From 60 to 68 points	6 (six) (E)
			From 69 to 76 points	7 (seven) (D)
			From 77 to 84 points	8 (eight) (C)

		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process	Anonymous student evaluation of the course and the teachers and associates participating in the teaching.				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	International Agency for Research on Cancer.	IARC Monograph on the Evaluation of the Carcinogenic Risk of Chemical To Humans. Some Industrial Chemicals. Vol. 115.	Lyon: IARC	2018
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Rom WN (ed.)	Environmental and Occupational Health (4th ed.)	Boston: Lippincott & Williams,	2007
2.		Anttila S, Boffetta P.	Occupational Cancers	New York: Springer	2014	

Number:25

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>CEREBROVASCULAR DISEASES (ETIOLOGY, PATHOPHYSIOLOGY, RISK FACTORS, CLASSIFICATION, CONTEMPORARY DIAGNOSIS AND TREATMENT</b>			
2.	<b>Code</b>	<b>MEDI 25</b>			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Neurology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Fourth (IV)	Semester	Eighth (VIII)
7	<b>ECTS credits</b>	1			

8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Anita Arsovska, PhD, MD		
9.	<b>Language of the study</b>	English		
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Signature from Neurology. To enter the exam, seminar work (writing text and presenting) is needed.		
11.	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• Acquaintance with the etiology, pathophysiological mechanisms, risk factors, clinical picture and modern diagnostic methods used in patients with cerebrovascular diseases</li> <li>• Familiarity with modern therapeutic principles of cerebrovascular diseases treatment in accordance with experts' recommendations, and on basis of evidence-based medicine guidelines</li> </ul>		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <ul style="list-style-type: none"> <li>• Etiology, pathophysiological mechanisms, risk factors and division of cerebrovascular diseases</li> <li>• Modern diagnostics of cerebrovascular diseases</li> <li>• Modern treatment of cerebrovascular diseases</li> </ul> <p><b>Practical course:</b></p> <ul style="list-style-type: none"> <li>• Examination of patients with transient ischemic attack</li> <li>• Examination of patients with ischemic cerebrovascular stroke</li> <li>• Review of patients with intracerebral and subarachnoid hemorrhage</li> <li>• Familiarity with specific diagnostic techniques in cerebrovascular diseases (ctm, mri, extracranial and transcranial color doppler sonography)</li> </ul> <p><b>Seminar work:</b></p> <ul style="list-style-type: none"> <li>• Contemporary diagnostic techniques in cerebrovascular diseases</li> <li>• Etiology, pathophysiology and classification of cerebrovascular diseases</li> <li>• Contemporary therapy of cerebrovascular diseases</li> <li>• Differential diagnosis of cerebrovascular diseases</li> </ul>		
13	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Lectures, PPP and exercises		
15.	<b>Total available time frame</b>	30		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	

17.	Other forms of activities		17.1.	Project tasks: hours		
			17.2.	Individual tasks: hours		
			17.3.	Studying at home: hours		15
18	Requirements for signature		To obtain signature, active presence at theoretical lessons are obliged.  The final mark is formed by summarizing the points of certain activities.			
19	Methods of assessment					
	19.1.	Tests: points			min.-max. 15-25	
	19.2.	Seminar paper/project, written and oral presentation: points			min.-max. 25-35	
	19.3.	Final exam: points			min.-max. 20-40	
20	Grading criteria (points/grade)			Up to 59 points	5 (five) (F)	
				From 60 to 68 points	6 (six) (E)	
				From 69 to 76 points	7 (seven) (D)	
				From 77 to 84 points	8 (eight) (C)	
				From 85 to 92 points	9 (nine) (B)	
				From 93 to 100 points	10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process			Anonymous student's evaluation of the subject, teachers and collaborators involved in the educational activities		
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Uluduz D, Arsovska A	Rare causes of stroke	Cambridge University Publisher	2022
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Roger S, Aminof M, Gringerb D	Clinical neurology	Chicago: Mc Graw-Hill Companies Inc.	2020

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>PATHOPHYSIOLOGY OF CENTRAL NERVOUS SYSTEM</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 26</b>			
<b>3.</b>	<b>Study program</b>	General medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Pathophysiology			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Third (III)	Semester	Sixth (VI)
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Associate Prof. Sinisa Stojanoski, PhD, MD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: passed exam of Pathophysiology 1, Signature of Pathophysiology 2 To take the exam the student is required to actively follow all of the planned activities. Theoretical course 10-20 points practical lectures 10-20 points			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	Study of the pathophysiology of brain functions with an integrated approach in the study of separate disorders of the central nervous system.			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	Content of the subject program: Theoretical teaching: <ul style="list-style-type: none"> <li>Disorders of cerebral blood flow (ischemia of brain tissue, hemorrhage, molecular pathogenesis of stroke)</li> <li>Organic psychosyndrome (disturbances of: consciousness, behavior, the memory; dementia; neurological syndromes due to damage to the cerebral cortex; speech disorders)</li> <li>Pathophysiology of nerve transmission (disorders of neurotransmitters, receptors)</li> <li>Disorders of the cerebrospinal fluid and the hemato-cerebral barrier (hydrocephalus, CSF analysis).</li> </ul> Practical work: analysis and discussion by separate groups of CNS disorders Seminar work: by separate disorders of the CNS Study of the pathophysiology of brain functions with an integrated approach in the study of separate disorders of the central nervous system.			
<b>13</b>	<b>Interconnection between subjects</b>	Related to all subjects in the study program			
<b>14.</b>	<b>Description of the subject's study and working methods in details</b>	Interactive teaching (theoretical), exercises, seminar work			

15.	Total available time frame	30 classes				
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours		5	
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours		10	
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours		15	
18	Requirements for signature	The student is required to actively follow all of the planned activities.				
19	Methods of assessment					
	19.1.	Tests: points				
	19.2.	Seminar paper/project, written and oral presentation: points		25-35		
	19.3.	Final exam: points		15-25		
20	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Student anonymous evaluation for the subject and the teachers and associates who participate in the performance of teaching.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	McPhee SJ, Ganong WF.	Pathophysiology of disease. An introduction to clinical medicine.	New York: Langee medical Books/McGraw-Hill	2003
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Gamulin S. et al.	Pathophysiology	Zagreb: Medicinska naklada	2013

Number:27

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>HEALTH ASSESSMENT AND STRATEGIC PLANNING FOR HEALTH IN COMMUNITY</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 27</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	University Ss Cyril and Methodius in Skopje, Faculty of medicine, Department of Social Medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Sixth (VI)	Semester	Eleventh (XI)
<b>7.</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Fimka Tozija, MD, PhD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Passed exam: Introduction to Medicine To access to the final exam the student should produce a written seminar paper and make a power point presentation.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<p>The teaching goals of this study program are to improve the knowledge of the student about health evaluation and by the end of this course the student to have skills and to be able to</p> <ul style="list-style-type: none"> <li>• Understand the management cycle and planning process in public health</li> <li>• Define the public health problem and to set the priorities for the public health intervention in the community</li> <li>• Analyze the public health problem and evidence- based process</li> <li>• Plan and recommend strategically appropriate effective evidence – based intervention</li> <li>• Monitor and evaluate the implementation of the intervention strategy</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p>At the end of the theoretical course the student will have improved knowledge and competences about the following topics:</p> <p>Chapter 1: Management cycle:</p> <ol style="list-style-type: none"> <li>1. Community health management cycle- a six – step planning process</li> <li>2. System of setting basic priorities and introduction to PEARL</li> </ol> <p>Chapter 2: Problem definition and analysis:</p> <ol style="list-style-type: none"> <li>1. Global goals and defining a community health problem</li> <li>2. Analysis of a health problem: determinants, direct and indirect</li> </ol>			



		contributing factors 3. Formulation of objectives: outcome, impact, process  Chapter 3: Intervention and strategy implementation: 1. Selection of evidence based intervention strategies – good practice 2. Intervention strategy design 3. Developing a work plan and program budget 4. Monitoring and evaluation  Chapter 4: Intervention in the community 5. Development of a health profile 6. Development of a health strategy in the community		
13	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject’s study and working methods in details	Interactive teaching, lectures, exercises, seminars, interactive workshops, group practical work and field work in community  Seminar work - Preparation of a seminar assignment on a given public health problem (seminar paper and power point presentation)		
15.	Total available time frame	30 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10 hours
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 hours
18	Requirements for signature	Conditional criteria for assessment of knowledge: To get a signature the student is required to attend the theoretical, practical training and seminars and to achieve minimum points.		
19	Methods of assessment			
	19.1.	Tests: points		
	19.2.	Seminar paper/project, written and oral presentation: points	Min-max	30-50
	19.3.	Final exam: points	Min-max Theoretical course Practical course	24-40 3-5 3-5  The grade of the subject is formed in accordance with the table of grades, based on the sum of points from all

			activities, continuous assessment and final exam			
20	Grading criteria (points/grade)	Up to 59 points		5 (five) (F)		
		From 60 to 68 points		6 (six) (E)		
		From 69 to 76 points		7 (seven) (D)		
		From 77 to 84 points		8 (eight) (C)		
		From 85 to 92 points		9 (nine) (B)		
		From 93 to 100 points		10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process	Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities				
22.	Literature					
	22.1.	Mandatory literature				
		Num ber	Author	Title	Publisher	Year
		1.	Detels R, Karim QA, Baum F. Li L, Leyland A.H.	Oxford Textbook of Global Public Health [7th ed.]	Oxford University Press	2021
		2.	Tozija F, Spasovski M, Kapasinov B.	Guidace for planning and implementing public health programs- Part 1	Faculty of Medicine, University Ss Cyril and Methodius	2013
		Additional literature				
	22.2.	Num ber	Author	Title	Publisher	year
		1.	Mellison M. et al.	Healthy Plan – it a tool for planning and managing public health	Centers for Disease Control	2005
		2.	Tulchinsky T, Varavikova E, Cohen MJ.	The New Public Health. 4 <sup>th</sup> Edition	New York: Elsevier	2023

Number:28

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
1.	<b>Subject</b>	<b>HEALTH POLICY</b>
2.	<b>Code</b>	MEDI 28
3.	<b>Study program</b>	General Medicine
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department for Social Medicine
5.	<b>Degree of education (first,</b>	Integrated 6-year studies

	<b>second, third cycle)</b>				
<b>6.</b>	<b>Academic year/semester</b>	Year	Sixth (VI)	Semester	Eleventh XI
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Mome Spasovski M.D., Ph.D.			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Preconditions for attending the classes: successfully completed the subject Social Medicine and Health Economics. In order to enter the final exam, the student should prepare a seminar paper (written and oral presentation).			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<p>The student acquires the following knowledge and skills:</p> <ul style="list-style-type: none"> <li>• Understanding the concept and practice of health policy</li> <li>• Differentiate between policy and politics</li> <li>• Knowledge on the development process of health policy documents</li> <li>• Knowledge on structures and roles</li> <li>• Understanding the co-creation and co-participation process in health research and health policy</li> <li>• Advocacy and health leadership in the community</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <p>Chapter 1. Health Policy</p> <ol style="list-style-type: none"> <li>1. Organization, management and planning of health systems;</li> <li>2. Public health services: status and prospects;</li> <li>3. Protection of patients' rights and responsibility of healthcare workers;</li> <li>4. Biological and medical-legal aspects of public health priorities;</li> <li>5. EU-Health Policy</li> </ol> <p>Study results: The student will gain knowledge on the national legal and institutional framework on which the health care is organized; skills for critical thinking, process analysis on health policies and comparison analysis with EU policies, as well as legal literacy.</p> <p>Chapter 2. Health Reform Policy</p> <ol style="list-style-type: none"> <li>6. Globalization and influence on Public Health;</li> <li>7. 50 years of global Health Policy, focus on the main points;</li> </ol> <p>Study results: The student</p> <p>Chapter 3. Accreditation of healthcare institutions</p> <ol style="list-style-type: none"> <li>1. Quality of healthcare services</li> <li>2. Clinical guidelines and evidence-based medicine</li> <li>3. Indicators for accreditation</li> </ol>			

		<p>Study results: The student will gain practical knowledge, skills on how the process of accreditation is delivered with mix of theoretical lessons and practical field work. How the evidence-based medicine influences the health policy and vice-versa.</p> <p><b>Practical course:</b> mix of classroom discussions using the methods of study scenarios and policy documents. Role plays scenarios of national public health councils, WHO stimulation strategy assemblies.</p> <p>Study results: The students will be able to understand the role of health policy plays on population's health status, social determinants of health, the delivery and quality of health care services. Moreover, the students will be equipped and gain practical knowledge by preparing health policies to address priorities in public health and health inequalities.</p>		
13	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject's study and working methods in details	Theoretical lectures: interactive lessons, group work, movie preview with content from the respective field. Practical classes: seminars, case studies, demonstration, role play. Individual work: discussions, evaluation of scientific literature, critical evaluation and understanding of health policy documents, consultations in segments of interest, essays.		
15.	Total available time frame	30 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18	Requirements for signature	In order to get a signature, the student is required to attend at least 60% of the theoretical and practical classes. The grade is formed according to the rating table, based on the sum of the points from all activities.		
19	Methods of assessment			
	19.1.	Tests: points		
	19.2.	Seminar paper/project, written and oral presentation: points	min. – max. 36 - 75 points	
	19.3.	Final exam: points	min. – max. 15 - 25 points	

20	Grading criteria (points/grade)	up to 59 points		5 (five) F		
		from 60 to 68 points		6 (six) E		
		from 69 to 76 points		7 (seven) D		
		from 77 to 84 points		8 (eight) C		
		from 85 to 92 points		9 (nine) B		
		from 93 to 100 points		10 (ten) A		
21.	Methods of monitoring the quality of the teaching process	Anonyms students’ evaluation form for all the professors and collaborators performance, involved in the educational activities				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Detels R, Beaglehole R, Lansang MA, Gulliford M.	Oxford Textbook of public health (5 <sup>th</sup> edition)	Oxford University Press	2009
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Donev D, Spasovski M, Kjosovska E, Tozija F.	Social Medicine	Skopje: UKIM, Medical Faculty	2013
		2.	Davidovski B, Tunachevski N, Pavlovska-Daneva A, Trendafilovska A, Karandzinska J, Spasovski M.	Law and Public Health	Skopje: Faculty of Law “Justinian Prima“	2009
		3.	Ministry of Health of the Republic of Macedonia	Health policies and documents	Web page: <a href="https://zdravstvo.gov.mk/#">https://zdravstvo.gov.mk/#</a>	Up to date
			4.	Maksi-Rozeno-Last,. Volas RL. et all.	Public Health and Preventive Medicine	Skopje: Tabernakul

Number:29

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>
1.	<b>Subject</b>	<b>LAW AND PUBLIC HEALTH</b>
2.	<b>Code</b>	<b>MEDI 29</b>
3.	<b>Study program</b>	General Medicine

4.	<b>Institution (unit, institute, chair, department)</b>	University Ss. Cyril and Methodius in Skopje, Faculty of Medicine, Department for Social Medicine			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	First (I)	Semester	Second (II)
7.	<b>ECTS credits</b>	1			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Mome Spasovski M.D., Ph.D.			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Successfully completed the subject Introduction to medicine. In order to enter the final exam, the student should prepare a seminar paper (written and oral presentation).			
11.	<b>Subject program goals (competences) and study results:</b>	<p>The student acquires the following knowledge and skills:</p> <ol style="list-style-type: none"> <li>1. Defining public health functions at different levels of government</li> <li>2. Define the methods available to government organizations to work with public health responsibilities and activities</li> <li>3. Use of the principles of the New Public Health in the activities of the national, state, regional and local level of administration</li> <li>4. Understanding the Macedonian healthcare system (legislation, administration, provision of health care and accreditation)</li> <li>5. Health policy and public health (impact of globalization and review of legislation)</li> <li>6. Health promotion and legislative aspects</li> <li>7. Biological and medical-legal aspects of public health priorities</li> </ol>			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course:</b></p> <p>Chapter 1. The health legislation framework</p> <ol style="list-style-type: none"> <li>4. Health care organization and health system</li> <li>5. Public services in the Republic of Macedonia</li> <li>6. Health workforce</li> </ol> <p>Study results:</p> <p>The student will gain better understanding to all crucial law documents on which the concept of health care is organized in our country.</p> <p>Chapter 2. Health policy</p> <ol style="list-style-type: none"> <li>7. Health strategies and national programs, action plans</li> <li>8. Legal aspects of health promotion</li> </ol> <p>Study results:</p>			

		<p>The student will gain knowledge on the important international and national health strategies, health promotion action plans. The student will develop critical thinking with analysing such documents.</p> <p>Chapter 3. Public Health and Law</p> <ol style="list-style-type: none"> <li>9. Socioeconomic determinants of health</li> <li>10. Assessment of the health status of the population</li> <li>11. Organization, legislation and conventions of bioethical and public health priorities</li> <li>12. Current problems and challenges in public health</li> </ol> <p>Study results:</p> <p>The student will gain practical skills on how to develop a law or policy from health evaluation, identification of public health priorities and challenges, setting goals and writing the documents.</p> <p><b>Practical lessons:</b> mix of classroom discussions using the method of case scenarios/studies on:</p> <ul style="list-style-type: none"> <li>• Patients' rights,</li> <li>• Reproductive justice,</li> <li>• Structural racism and discrimination.</li> </ul> <p>Workshop on the role that law played in the public health impact of the pandemic.</p> <p>Study results:</p> <p>The student will be able to gain knowledge on:</p> <ul style="list-style-type: none"> <li>• practical knowledge on how health legislation is prepared and implemented in practice;</li> <li>• the role of law on public health programmes, pandemics and the health status of the population;</li> </ul> <p>Moreover, the student will acquire skills for critical thinking, analysing and legal literacy.</p>		
13	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	<p>Theoretical lectures: interactive lessons, group work, movie preview with content from the respective field.</p> <p>Practical classes: seminars, case studies, demonstration, role play.</p> <p>Individual work: discussions, evaluation of scientific literature, critical evaluation and understanding of law documents, consultations in segments of interest, essays.</p>		
15.	<b>Total available time frame</b>	30 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18	<b>Requirements for signature</b>	In order to get a signature, the student is required to attend at least 60% of the theoretical and practical classes.		

		The grade is formed according to the rating table, based on the sum of the points from all activities.				
19	Methods of assessment					
	19.1.	Tests: points			n/a	
	19.2.	Seminar paper/project, written and oral presentation: points			min. – max. 36 - 75 points	
	19.3.	Final exam: points			min. – max. 15 - 25 points	
20	Grading criteria (points/grade)		up to 59 points	5 (five) F		
			from 60 to 68 points	6 (six) E		
			from 69 to 76 points	7 (seven) D		
			from 77 to 84 points	8 (eight) C		
			from 85 to 92 points	9 (nine) B		
			from 93 to 100 points	10 (ten) A		
21.	Methods of monitoring the quality of the teaching process		Anonyms students’ evaluation form for all the professors and collaborators performance, involved in the educational activities.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Tulchinsky TH, Varavnikova EA.	The New Public Health: An introduction for the 21 <sup>st</sup> century	San Diego: Academic press	2001
		2	Detels R., Beaglehole R., Lansang MA., Gulliford M.	Oxford Textbook of public health (5 <sup>th</sup> edition)	Oxford University Press	2009
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	Davidovski B, Tunachevski N, Pavlovska-Daneva A, Trendafilovska A, Karandzinska J, Spasovski M.	Law and Public Health	Skopje: UKIM, Faculty of Law	2009



Number:30

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>MIGRANT HEALTH</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 30</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	University Ss Cyril and Methodius in Skopje, Faculty of Medicine, Department of Social Medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	First (I)	Semester	Second (II)
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Fimka Tozija MD, PhD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	None To access to the final exam the student should produce a written seminar paper and make a power point presentation.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<p>The teaching goals of this study program are to improve the knowledge of the student about migrant health and by the end of this course the student to have skills and to be able to:</p> <ul style="list-style-type: none"> <li>• Recognize the main categories of migrants and their characteristics</li> <li>• Know the main factors contributing to discrimination and poor health of migrants and limited access to health care as an obstacle for their integration in the host country</li> <li>• Know the legislation on human rights and the rights to health in Republic of North Macedonia and Europe</li> <li>• Recognize the barriers to health care especially in the host country</li> <li>• Be aware about the status of migrants globally and especially in Europe</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p>At the end of the theoretical course the student will have improved knowledge and competences about the following topics:</p> <p>Chapter 1: Definitions and concepts:</p> <ol style="list-style-type: none"> <li>1. Introduction to the main categories of migrants, refugees, asylum seekers and undocumented migrants</li> <li>2. Introduction to the key concepts that lead to health inequality, such as: ethnicity, gender, race, social status, poverty, culture and illiteracy, as well as the impact of discrimination and racism on health</li> </ol> <p>Chapter 2: Migration, mobility, status and challenges:</p>			

		3. Differences between migrants, asylum seekers and undocumented migrants 4. Reasons for the current mobility and migration of the population in the world and Europe 5. Contributing factors for poor health of migrants and refugees 6. The current situation in Republic of North Macedonia, profile and living conditions of migrants, undocumented migrants and refugees  Chapter 3: Legislation and policy for migrant integration and health 7. Legislation for human rights and the rights for access to health care services for different categories (migrants, refugees, undocumented migrants) in the country and Europe 8. Integration policy of migrants 9. Data and research for migrants 10. Health system response		
13	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject's study and working methods in details	Interactive teaching, lectures, exercises, seminars, interactive workshops, group practical work and field work in community  Seminar work: preparation of a seminar assignment: seminar paper and power point presentation. Presentation and defense of the seminar work.		
15.	Total available time frame	30 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10 hours
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 hours
18	Requirements for signature	To get a signature the student is required to attend the theoretical, practical training and seminars and to achieve minimum points to access the final exam		
19	Methods of assessment			
	19.1.	Tests: points		
	19.2.	Seminar paper/project, written and oral presentation: points	Min-max	30-50
	19.3.	Final exam: points	Min-max	24-40
			Theoretical course	3-5
		Practical course	3-5	
		The grade of the subject is formed in accordance with the table of grades, based on the		

			sum of points from all activities, continuous assessment and final exam			
20	Grading criteria (points/grade)	Up to 59 points		5 (five) (F)		
		From 60 to 68 points		6 (six) (E)		
		From 69 to 76 points		7 (seven) (D)		
		From 77 to 84 points		8 (eight) (C)		
		From 85 to 92 points		9 (nine) (B)		
		From 93 to 100 points		10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process	Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities				
22.	Literature					
	22.1.	Mandatory literature				
		Numb er	Author	Title	Publisher	Year
		1.	WHO	Health literacy: The solid facts- WHO/Europe - World	World Health Organization	2013
		2.	WHO	International migration, health and human rights	Office of thr High Commissioner for Human Rights and the International Organisation fot Migrants	2013
		3.	Tulchinsky T,Varalinkova E, Cohen MJ.	The New Public Health. 4 <sup>th</sup> Edition	New York: Elsevier	2023
		4.	Rechel R, Mladovsky Ph, Devillé W, Rijks B, Petrova-Benedict R, McKee M.	Migrants and the health in the European Union	European Observatory on Health Systems and Policies	2011
	22.2.	Additional literature				
		Numb er	Author	Title	Publisher	year
		1.	WHO/ European Commission on equity project	How health systems can address health inequities linked to migration and ethnicity	WHO	2010
		2.	IOM	Summary report on the MIPEX , Health Strand and Country Reports	IOM	2016

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>CULTURAL AND STRUCTURAL COMPETENCIES OF HEALTH PROFESSIONALS</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 31</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Social Medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year study			
<b>6.</b>	<b>Academic year/semester</b>	Year	First (I)	Semester	Second (II)
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Elena Kjosevska, Ph.D, MD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	There is none In order to take the final exam, the student has to write an essay on a given topic in written form.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<b>General purpose:</b> To strengthen the cultural and structural competencies of students to overcome inequality, disparities, invisible discrimination, as well as the influence of socio-economic factors in the health care of patients with a special focus on marginalized groups. <b>Other goals:</b> <ul style="list-style-type: none"> <li>• Acquisition of knowledge, skills and techniques for practicing narrative medicine with a focus on cultural and structural competencies in health care;</li> <li>• Study of examples of inequalities in health care with special focus on vulnerable groups;</li> <li>• Sensitization for the acceptance of the rights to health and equality in the national and European context.</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<ul style="list-style-type: none"> <li>• Narrative medicine, narrative ethics and technique-concepts (health worker-patient relations, in everyday clinical practice);</li> <li>• Ethical aspects of research on humans and vulnerable populations;</li> <li>• Cultural competences - definition, the importance of cultural differences in the medical context (cultural identification, language barriers, method of communication, etc.), intercultural education;</li> <li>• Structural competencies (notion of "structural vulnerability", sources and effects of socioeconomic inequality); • Medical</li> </ul>			

		responsibility for non-discrimination (in relation to patients...), attitudes, knowledge, skills; <ul style="list-style-type: none"><li>• Health system, right to health, processes of discrimination (stereotypes, prejudices, differences), principles of non-discrimination in the EU and in national frameworks;</li><li>• Observing the phenomenon of discrimination with an appropriate approach to health protection among vulnerable groups (HIV positive people, women and children victims of violence, LGBTI people, sex workers, people who use drugs, people with disabilities, Roma, poor people, and other groups);</li><li>• Analysis of the status of the Roma, as the most represented vulnerable groups (history, health, culture, employment, language, socio-economic status, emancipation, etc., (in European and national context);</li><li>• The notion of equality and its assumptions: formal and essential equality between different social groups and reduction of health differences;</li><li>• Respect for human rights to life, health, privacy, family life and non-discrimination</li></ul>														
13	Interconnection between subjects	Related to all subjects in the study program														
14.	Description of the subject’s study and working methods in details	Presentation of cases from clinical practice; Organizing an open discussion in small groups on a given topic; Play a role according to a given scenario; Practicing listening techniques. writing, communication, interpretation, observation, etc. Writing an essay on a given topic														
15.	Total available time frame	30														
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5												
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10												
		16.3.	Practice: hours													
17.	Other forms of activities	17.1.	Project tasks: hours	5												
		17.2.	Individual tasks: hours	5												
		17.3.	Studying at home: hours	5												
18	Requirements for signature	In order to get a signature, the student needs to attend theoretical and practical classes and earn a minimum number of points. The grade for the subject is formed according to the grade table, and based on the sum of the points from all activities, and the final exam. <table><tr><td></td><td></td><td>Min</td><td>max</td></tr><tr><td>Theoretical course</td><td>points</td><td>10</td><td>20</td></tr><tr><td>Practical course</td><td>points</td><td>10</td><td>20</td></tr></table>					Min	max	Theoretical course	points	10	20	Practical course	points	10	20
		Min	max													
Theoretical course	points	10	20													
Practical course	points	10	20													
19	Methods of assessment															
	19.1.	Tests: points	/													

	19.2.	Seminar paper/project, written and oral presentation: points	min 25 max 35			
	19.3.	Final exam: points	Min 15 max 25			
20	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Rita Charon	Principles and Practice of Narrative Medicine	Oxford University Press	2017
			Seth M. Holmes, Kelly R. Knight	Structural competency	PH 290 – Spring 2015, <a href="http://bit.ly/holmes_officehours">http://bit.ly/holmes_officehours</a>	2015
		3.	Jonathan M. Metzl Helena Hansen	Structural competency: Theorizing a new medical engagement with stigma and inequality Structural Stigma and Population Health	Social Science & Medicine Volume 103, Pages 126– 133	2014
		2.				
		2.				
		3.				
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year

		1.	Kjosevska E, Stefanovska VV, Najcevska M, Ismail Georgievska Lj, Spasovski M, Dimova C, Polozhani A, Mircevska L, Rajcanovska D.	Cultural and structural competencies of health professionals-textbook	Open Society Foundation - Macedonia	2018
		2.	Kjosevska E, Stefanovska VV, Najcevska M, Ismail Georgievska L., Spasovski M, Dimova, Polozhani A, Mircevska L, Rajcanovska D.	Cultural and structural competencies of health professionals-practicum	Open Society Foundation - Macedonia	2018
		3.	Charon Rita, Hermann Nellie, Devlin Michael.	Close Reading and Creative Writing in Clinical Education: Teaching attention, Representation and Affiliation	Washintong: AAMC; Academic medicine	2015

Number:32

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>EDUCATION WITH SIMMULATION IN PRIMARY CARE</b>			
<b>2.</b>	<b>Code</b>	MEDI 32			
<b>3.</b>	<b>Study program</b>	General medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of family medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Ninth (IX)
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Katarina Stavrikj, PhD, MD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Received all the signatures from all the subjects from the eight semester. In order to take the final exam, the student has to pass the on line training, practical exercises and get a signature for completed practice and prepare a project task.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	At the end of the program the students will: <ul style="list-style-type: none"> <li>acquire adequate theoretical and practical skills in learning through method of simulation and debriefing</li> <li>be able to solve the most common urgent conditions I primary care</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<ul style="list-style-type: none"> <li>Theoretical perspectives and framework for simulation in medicine</li> <li>Ethics of healthcare simulation in primary care</li> <li>Exploring the realism in healthcare simulation</li> <li>Maintaining humanism in practice</li> <li>Teamwork and non-technical skills during simulation in primary care</li> <li>Gamification</li> <li>Facilitating simulation in primary care</li> <li>Strategies to manage adverse events in simulation</li> <li>Debriefing – theory and practice</li> <li>Common urgent conditions in GPs practice – BLS, ALS, anaphylaxis, palliative care emergency, convulsion in a child</li> </ul>			
<b>13</b>	<b>Interconnection between subjects</b>	Related to all subjects in the study program			
<b>14.</b>	<b>Description of the subject's study and working methods in details</b>	Interactive teaching, practical work .			
<b>15.</b>	<b>Total available time frame</b>	30			
<b>16.</b>	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours		5



		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10		
		16.3.	Practice: hours			
		17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours			
18	Requirements for signature	In order to get a signature, the student needs to attend the theoretical and practical classes and get minimum 75% from the knowledge test.				
19	Methods of assessment					
	19.1.	Tests: points				
	19.2.	Seminar paper/project, written and oral presentation: points				
	19.3.	Final exam: points		60-100  The grade for the subject is formed according to the grade table, based on the sum of the points of all activities, the continuous checks and the final exam.		
20	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Students' anonymous evaluation of the subject and medical staff included in the teaching process			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Nestel D(Editor), Kelly ME (Editor), Jolly B (Editor), Watson M (Editor)	Healthcare Simulation Education: Evidence, Theory and Practice	Boston: Wiley-Blackwell	2017

22.2.	Additional literature				
	Number	Author	Title	Pu bli she r	Year
	1.	ERC	European Resuscitation Council Guidelines for Resuscitation	ER C	2021

Number:33

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	IMMUNISATION			
2.	Code	MEDI 33			
3.	Study program	General medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of family medicine			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Fifth (V)	Semester	Ninth (IX)
7.	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Dr Katarina Stavrikj, PhD, MD			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Received all the signatures from all the subjects from the eight semester. In order to take the final exam, the student has to pass the on line training, practical exercises and get a signature for completed practice and prepare a project task.			
11.	Subject program goals (competences) and study results:	Students to expand their knowledge, skills and attitudes: <ul style="list-style-type: none"> <li>• About the benefits of immunization</li> <li>• Safe vaccine application</li> <li>• For implementation of immunization in practice</li> <li>• Supervision and monitoring of the immunization process</li> <li>• Interpersonal communication about immunization</li> </ul>			
12.	Subject content in details by chapters and units, with study results for every chapter	Subject content will be organized in modules: <ul style="list-style-type: none"> <li>• Module 1 Diseases and vaccines               <ul style="list-style-type: none"> <li>• Disease for which vaccines are part of the immunization program</li> <li>• Immunization program of Macedonia: Regular and CATCH-UP Immunization Calendar</li> </ul> </li> <li>• Module 2 Cold chain               <ul style="list-style-type: none"> <li>• use of cold chain and temperature monitoring equipment</li> <li>• the basic maintenance of cold chain equipment.</li> </ul> </li> <li>• Module 3 Safety procedures during vaccination</li> </ul>			

		<ul style="list-style-type: none"> <li>• Provide safety for the patient - use of safe equipment for vaccine application</li> <li>• Prevention of health workers from needle injuries</li> <li>• Disposal of used syringes and needles</li> </ul> <ul style="list-style-type: none"> <li>• Module 4 Microplanning</li> </ul> <p>Making and updating a map;</p> <ul style="list-style-type: none"> <li>• Identifying priority health centres and communities;</li> <li>• Identifying barriers to vaccination access;</li> <li>• Identifying solutions and preparing a workplan;</li> <li>• Preparing a vaccination plan;</li> <li>• Monitoring/finding children who missed scheduled vaccinations (defaulters).</li> </ul> <ul style="list-style-type: none"> <li>• Module 5 management of the immunization process <ul style="list-style-type: none"> <li>• to inform the community in advance, before starting the vaccination</li> <li>• to set up the site for safe immunization</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>• Module 6 Monitoring and surveillance <ul style="list-style-type: none"> <li>• Monitoring the immunization services</li> <li>• Surveillance of vaccine-preventable diseases</li> <li>• Adverse events following immunization (AEFI)</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>• Module 7 Partnership with the community <ul style="list-style-type: none"> <li>• to train and motivate vaccination teams to work with community members and to improve the immunization process at every level</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>• Module 8 Interpersonal communication about immunization <ul style="list-style-type: none"> <li>• Continuum of vaccine hesitancy</li> <li>• Active listening</li> <li>• Algorithms for communication</li> <li>CASE protocol for communication with hesitant parents</li> <li>• Communication with the community</li> </ul> </li> </ul>		
13	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	On-line modules, interactive teaching, practical work under mentoring in a prevention team.		
15.	<b>Total available time frame</b>	30		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18	<b>Requirements for signature</b>	In order to get a signature, the student needs to complete the on-line training, to attend the theoretical and practical classes and get minimum points.		

19	Methods of assessment					
	19.1.	Tests: points			40	
	19.2.	Seminar paper/project, written and oral presentation: points			20	
	19.3.	Final exam: points			40 The grade for the subject is formed according to the grade table, based on the sum of the points of all activities, the continuous checks and the final exam.	
20	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Students' anonymous evaluation of the subject and medical staff included in the teaching process			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		2.	Karam R, Rennie W, Stephanie Clayton S.	Interpersonal Communication for Immunization Training for Front Line Workers	UNICEF	2019
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		1.	WHO	Immunization in practice: a practical guide for health staff – 2015 update.	WHO <a href="#">Immunization in practice: a practical guide for health staff (who.int)</a>	2015

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>SMOKING CESSATION IN PRIMARY CARE</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 34</b>			
<b>3.</b>	<b>Study program</b>	General medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of family medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Ninth (IX)
<b>7.</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Katarina Stavrikj, PhD, MD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Received all the signatures from all the subjects from the eight semester. In order to take the final exam, the student has to pass the on line training, practical exercises and get a signature for completed practice and prepare a project task.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	Subject program: <ul style="list-style-type: none"> <li>• factors that influent the smoking and the need for tobacco addiction treatment</li> <li>• Very brief advice – ask, advise, act.</li> <li>• A combined model for behavioral support and pharmacological treatment.</li> <li>• Barriers and frequently asked questions from patients.</li> <li>• E-cigarettes.</li> <li>• Motivational interview</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	Students to expand their knowledge, skills and attitudes to initiate support in the process of quitting smoking in primary care setting: <ul style="list-style-type: none"> <li>• To know the harmful effects of smoking, nicotine addiction and the need for treatment.</li> <li>• To acquire knowledge and skills to provide a very brief advice in primary care practice.</li> <li>• To acquire knowledge and skills for practicing a combined model for the treatment of tobacco addiction.</li> <li>• To guide the patient through pharmacological therapy, possible combinations and their side effects.</li> <li>• To be able to prepare an individual smoking cessation plan using the combined model.</li> <li>• To understand the difficulty and complexity of the process of quitting smoking.</li> <li>• To gain knowledge about the advantages and disadvantages of E-cigarettes in quitting smoking in a patient with tobacco addiction</li> </ul>			

		<ul style="list-style-type: none"><li>To improve knowledge and skills for the use and proper management of motivational interview in the management of a patient with tobacco addiction.</li></ul>				
13	Interconnection between subjects	Related to all subjects in the study program				
14.	Description of the subject’s study and working methods in details	Interactive teaching, practical work under mentoring in a prevention team.				
15.	Total available time frame	30				
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5		
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10		
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours			
		17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours	15		
18	Requirements for signature	In order to get a signature, the student needs to attend the theoretical and practical classes and get minimum points.				
19	Methods of assessment					
	19.1.	Tests: points				
	19.2.	Seminar paper/project, written and oral presentation: points		15-30		
	19.3.	Final exam: points		45-70		
20	Grading criteria (points/grade)	Up to 59 points		5 (five) (F)		
		From 60 to 68 points		6 (six) (E)		
		From 69 to 76 points		7 (seven) (D)		
		From 77 to 84 points		8 (eight) (C)		
		From 85 to 92 points		9 (nine) (B)		
		From 93 to 100 points		10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process	Students’ anonymous evaluation of the subject and medical staff included in the teaching process				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	ENSP	Guidelines for treating tobacco dependence	<a href="#">guidelines_2020_english_forprint.pdf (ensp.network)</a>	2020
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year

		2.	IPCRG	PCRS Pragmatic Guides for Clinicians Diagnosis and management of Tobacco Dependency	<a href="http://iperg.org">Layout 1 (iperg.org)</a>	2019
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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>KINESITHERAPY</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 35</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Physical Medicine and Rehabilitation			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Ninth (IX)
<b>7.</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Associate professor Valentina Koevska, PhD, MD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Filled in enrollment in IX semester			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• Introduction to basic principles of the use of kinesitherapy in prophylaxis and in the process of medical rehabilitation.</li> <li>• Introduction with kinesitherapy methods and the means of kinesitherapy</li> <li>• Introduction with kinesitherapy as a therapeutic procedure with its own indications and contraindications</li> <li>• Link the efficacy of kinesitherapy with other physical agents</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<ul style="list-style-type: none"> <li>• The place of kinesitherapy in physical medicine and rehabilitation</li> <li>• Biological effects of kinesitherapy on locomotor, nervous, cardiovascular, respiratory and digestive systems</li> <li>• The influence of kinesitherapy on the psychic, social and professional position of the patient</li> <li>• Goals of kinesitherapy</li> <li>• Principles of kinesitherapy</li> <li>• Means of kinesitherapy</li> </ul>			

		<ul style="list-style-type: none"><li>• Dosage of kinesitherapy</li><li>• The starting position of the exercises</li><li>• Kinesitherapy equipment</li><li>• Methods of monitoring and recording in kinesitherapy</li><li>• Recreational gymnastics and kinesitherapy through sporting activities</li></ul>		
13	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching, lectures, practical laboratory lessons, project assignments, independent assignments, home study		
15.	<b>Total available time frame</b>	30 classes		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18	<b>Requirements for signature</b>	The student is required to actively follow all of the planned activities		
19	<b>Methods of assessment</b>			
	19.1.	Tests: points	18-30	
	19.2.	Seminar paper/project, written and oral presentation: points	36-60	
	19.3.	Final exam: points	1 Final test points 18-30 (if they have not passed the continuous check)  The student is obliged to achieve a minimum of the expected points. In contrast, the exam is not considered.	
	19.4	Active participation	Theoretical course (min – max): 6-10 points  Attending the theoretical lessons 51% -60% 6 points 61% -70% 7 points 71% -80% 8 points 81% - 90% 9 points 91% - 100% 10 points	



20	Grading criteria (points/grade)	Up to 59 points	5 (five) (F)			
		From 60 to 68 points	6 (six) (E)			
		From 69 to 76 points	7 (seven) (D)			
		From 77 to 84 points	8 (eight) (C)			
		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process	Student anonymous evaluation of the subject and the teachers and collaborators participating in the teaching				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Braddom R.	Physical Medicine and Rehabilitation.	New York: Elsevier	2011
		2.	De Lisa J.	DeLisas` Physical Medicine and Rehabilitation. Principles and Practice	Philadelphia: LWW	2011
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Nikolic-Dimitrova E	Exercise therapy (Kinesitherapy), Physical Medicine and Rehabilitation	Skopje: Laserjet	2011
		2.	Stojanovska M	Fundamentals of kinesitherapy	Skopje: Pergament Public	2010

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>PHYSICAL AGENTS IN PAIN TREATMENT</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 36</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Physical Medicine and Rehabilitation			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Ninth (IX)
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Erieta Nikolikj Dimitrova, MD, PhD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Requirement for the ninth semester fulfilled			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<b>Teaching goals:</b> <ul style="list-style-type: none"> <li>• To acquire knowledge for fundamentals of physical agents</li> <li>• To acquire knowledge for physiological and therapeutic effects of some physical modalities</li> <li>• To acquire knowledge about usage of these methods in treatment and research</li> <li>• To acquire knowledge and training for applying physical modalities in treatment of acute pain</li> <li>• To acquire knowledge and training for applying physical modalities in treatment of chronic pain</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Fundamentals of electrotherapy</li> <li>• Galvanic currents</li> <li>• Iontophoresis</li> <li>• Dyadinamic currents</li> <li>• Interferential currents</li> <li>• High Frequency currents (Short currents)</li> <li>• Transcutaneous electrical nerve stimulation</li> <li>• Therapeutic ultrasound</li> <li>• Low level laser therapy</li> </ul>			

		<ul style="list-style-type: none"><li>• Low frequency electromagnetic field</li><li>• Shock wave therapy</li></ul> <p><b>Practical lessons:</b> Introduction to different therapeutic physical modalities</p>
13	<b>Interconnection between subjects</b>	There are some interconnections with mandatory subject Physical medicine and rehabilitation.
14.	<b>Description of the subject's study and working methods in details</b>	<ul style="list-style-type: none"><li>• Interactive teaching during lectures,</li><li>• Independent study by using textbooks.</li></ul>
15.	<b>Total available time frame</b>	30 classes 15 classes - theoretical course 15 classes - home individual learning
16.	<b>Forms of teaching activities</b>	16.1. Lessons – theoretical lessons, hours 5
		16.2. Practical lessons (laboratory, auditory), seminars, team work: hours 10
		16.3. Practice: hours /
17.	<b>Other forms of activities</b>	17.1. Project tasks: hours /
		17.2. Individual tasks: hours /
		17.3. Studying at home: hours 15
18	<b>Requirements for signature</b>	The student is required to actively follow all of the planned activities. In order to get a signature, the student should obtain minimum points in theoretical course.
19	<b>Methods of assessment</b>	
19.1.	Tests: points	Continual assessment – 1 written (min – max) : 18-30 points
19.2.	Seminar paper/project, written and oral presentation: points	1 Seminar paper/project (min – max): 36-60 points
19.3.	Final exam: points	1 Final test points 18-30 (if they have not passed the continual check)  The student is obliged to achieve a minimum of the expected points. In contrast, the exam is not considered.

	19.4	Active participation	Theoretical course (min – max): 6-10 points  Attending the theoretical lessons 51% -60% 6 points 61% -70% 7 points 71% -80% 8 points 81% - 90% 9 points 91% - 100% 10 points  The grade in the final exam is given according to the grading table, and on the basis of the sum of points obtained in all of the activities.			
20	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Student’s anonymous evaluation of the subject and teaching stuff who are involved in the education.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Braddom R.	Physical Medicine and Rehabilitation.	New York: Elsvier	2011
		2.	De Lisa J.	DeLisas` Physical Medicine and Rehabilitation. Principles and Practice	Philadelphia: LWW	2011
		22.2.	Additional literature			
	Number		Author	Title	Publisher	year
	1.		Nikolic-Dimitrova E	Exercise therapy (Kinesitherapy), Physical Medicine and Rehabilitation	Skopje: Laserjet	2011

		2.	Teaching materials on English for students prepared by the faculty
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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>BALNEOCLIMATOTHERAPY</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 37</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Physical Medicine and Rehabilitation			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	V	Semester	IX
<b>7.</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Associate Prof. Biljana Mitrevska, MD, PhD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Requirement for the ninth semester fulfilled			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	Teaching goals: <ul style="list-style-type: none"> <li>• To get knowledge of the natural sources of some physical agents (sun, sea, mineral water, peloids);</li> <li>• To get knowledge of the methods of treatment in balneoclimatotherapy</li> <li>• To get knowledge with the mineral waters, species, their effects on the patients and their application</li> <li>• To have the ability to apply mineral water in the treatment of the diseased and the injured</li> <li>• To get to know the role of climatotherapy in the treatment</li> <li>• To become familiar with peloidotherapy, her activity and application</li> <li>• To know about thalassotherapy</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<ul style="list-style-type: none"> <li>• Mineral waters, classification, mechanism of action, methods of application</li> <li>• Peloidotherapy, peloid forms, their deposit, preparation and regeneration</li> <li>• Physico-chemical properties of peloid, methods and techniques for application</li> <li>• Climatotherapy, climatic factors, climate conditions and their effects on the body</li> <li>• Thalassotherapy, coastal climate, sea water and its effects on the body</li> <li>• Heliotherapy</li> </ul>			

		<ul style="list-style-type: none"><li>• Inhalation therapy</li><li>• Spa treatments in Macedonia</li></ul>		
13	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject's study and working methods in details	Interactive teaching, lectures, independent assignments, home study		
15.	Total available time frame	30 classes		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	7
		17.3.	Studying at home: hours	8
18	Requirements for signature	The student is required to actively follow all of the planned activities. In order to get a signature, a student is required to attend the theoretical classes and to get a minimum points.		
19	Methods of assessment			
	19.1.	Tests: points	Continual assessment min-max 18-30 points	
	19.2.	Seminar paper/project, written and oral presentation: points	1 seminar paper/project points Min-max 36-60	
	19.3.	Final exam: points	1 Final test points 18-30 (if they have not passed the continuous check)  The student is obliged to achieve a minimum of the expected points. In contrast, the exam is not considered.	
	19.4	Active participation	Theoretical course min – max 6-10 Attending the theoretical lessons 51% -60% 6 points 61% -70% 7 points 71% -80% 8 points 81% - 90% 9 points 91% - 100% 10 points  The grade for the subject is formed according to the	

			rating table, based on the points from all the activities, the continuous checks and the final exam.			
20	Grading criteria (points/grade)	Up to 59 points		5 (five) (F)		
		From 60 to 68 points		6 (six) (E)		
		From 69 to 76 points		7 (seven) (D)		
		From 77 to 84 points		8 (eight) (C)		
		From 85 to 92 points		9 (nine) (B)		
		From 93 to 100 points		10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process	Student anonymous evaluation of the subject and the teachers and collaborators participating in the teaching				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Braddom R.	Physical Medicine and Rehabilitation.	New York: Elsevier	2011
		2.	De Lisa J.	DeLisas' Physical Medicine and Rehabilitation. Principles and Practice	Philadelphia: LWW	2011
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Nikolik-Dimitrova E. Mitrevska B, Koevska V	Balneoclimatotherapy	Skopje: UKIM, Medical Faculty	2021
		2.	Nikolik-Dimitrova E	Basics of Physical Therapy	Skopje: Laser Jet, RM	2011
		3.	Mihajlovik V	Physical Therapy	Rijeka: Obodsko slovo	2002

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>FOOD SAFETY AND HEALTH RISKS</b>			
<b>2.</b>	<b>Code</b>	MEDI 38			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Hygiene			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Third (III)	Semester	Fifth (V)
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. D-r Gordana Ristovska, PhD, MD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Passed exam in hygiene			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	Adoption of the knowledge, skills, and basic principles for food contaminants, food additives, genetically modified food, measures and systems for early detection and reporting, to understand relation between climate change and new emerging food borne diseases.			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Microbiological contaminants in food, analysis of outbreaks caused by food contaminated with microbial agents;</li> <li>• Chemical agents in food, chronic exposure and effects, incidents with food contaminated with chemicals</li> <li>• Genetically modified food and expected effects in humans</li> <li>• Food allergy and food intolerance</li> <li>• New emerging food borne diseases and public health</li> <li>• Practical teaching:</li> <li>• Visit and introduction to food safety testing laboratories at the Institute of Public Health with emphasis on microbiological testing, testing of contaminants, additives, testing of food contact materials.</li> <li>• Seminar work: analysis of cases of unsafe food that represented a regional or global threat to public health.</li> </ul>			
<b>13</b>	<b>Interconnection between subjects</b>	Related to all subjects in the study program			
<b>14.</b>	<b>Description of the subject's study and working methods in details</b>	Lecturing, exercises/seminars			
<b>15.</b>	<b>Total available time frame</b>	30 hours			



16.	Forms of teaching activities		16.1.	Lessons – theoretical lessons, hours	5	
			16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10	
			16.3.	Practice: hours		
17.	Other forms of activities		17.1.	Project tasks: hours		
			17.2.	Individual tasks: hours		
			17.3.	Studying at home: hours	15	
18	Requirements for signature		Conditional criteria: The student must participate at the theoretical and practical lessons in order to obtain signature.  points min max Theoretical course 10 - 20 Practical course 10 - 20			
19	Methods of assessment					
	19.1.	Tests: points	/			
	19.2.	Seminar paper/project, written and oral presentation: points	Seminar work	points min max 25-35		
	19.3.	Final exam: points	Oral exam	points min max 15 - 25		
20	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Ray B, Bhunia A,	Fundamental food microbiology	Abingdon: Taylor& Francis Group	2008
		2.	World Health Organization	The burden of foodborne diseases in WHO European Region	WHO Regional Office for Europe	2016

		3.	Food and Agriculture Organization	Climate change: Unpacking the burden on food safety.	FAO	2020
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Kochubovski M, Ristovska G, Spiroski I, Petrova A.	Manual for hygiene and environmental health	Skopje, Faculty of Medicine	2021
		2.	WHO Regional Office for Europe	A healthy environment in the WHO European Region: why it matters and what steps we can take to improve health.	WHO Regional Office for Europe; Copenhagen	2023

Number:39

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	OBESITY AND PUBLIC HEALTH			
2.	Code	MEDI 39			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of of Nutrition at the Institute of Public Health			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Third (III)	Semester	Fifth (V)
7.	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Igor Spiroski, MD, PhD			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Precondition for attending the classes: passed exam of Hygiene Student must fulfill all given assignments before taking the exam.			
11.	Subject program goals (competences) and study results:	After completing the program, the student will gain specific knowledge related to public health aspects of obesity as a risk factor for occurrence of non-communicable diseases (NCDs).			

		The student will gain skills in: <ul style="list-style-type: none"><li>• Measurements to prove existence of overweight and obesity;</li><li>• Measurements of body composition;</li><li>• Influence of nutrition for obesity;</li><li>• Influence of environment and lifestyle for obesity;</li><li>• Burden of obesity for healthcare system;</li><li>• Communication related to obesity;</li><li>• Creation of evidence based policy for obesity;</li><li>• Public health interventions to reduce the risks of obesity.</li></ul>		
12.	Subject content in details by chapters and units, with study results for every chapter	<ul style="list-style-type: none"><li>• Define and classify obesity in children and adults – cut-offs;</li><li>• Use tool for defining and classifying of obesity – tools and softwares;</li><li>• Assess risks for occurrence obesity related to nutrition, environment and lifestyle – family and environment burden;</li><li>• Acquire knowledge regarding body composition and health risks – methods of assessment;</li><li>• Assess the public health risk related to obesity – steps for performing;</li><li>• Explore the public health interventions for reducing the prevalence of obesity – review the evidence.</li></ul>		
13	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject’s study and working methods in details	Theoretical course: lectures, interactive teaching, group work, following news and trends on the subject. Practical course: seminars, exercises, tools for assessment of risks, simulations, analysis of cases. Individual: discussions, literature search and analysis, consultations regarding specific individual interests, essays, project tasks.		
15.	Total available time frame	30 teaching hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	6
		17.2.	Individual tasks: hours	4
		17.3.	Studying at home: hours	5
18	Requirements for signature	Student must be present at course activities. Student is graded according to the announced criteria.		
19	Methods of assessment			
	19.1.	Tests: points	40	
	19.2.	Seminar paper/project, written and oral presentation: points	20	
	19.3.	Final exam: points	40	
20	Grading criteria (points/grade)	Up to 59 points		5 (five) (F)

		From 60 to 68 points	6 (six) (E)			
		From 69 to 76 points	7 (seven) (D)			
		From 77 to 84 points	8 (eight) (C)			
		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process	Students' evaluation for the course content and teachers' performance				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Lobstein T, Brinsden H.	Obesity: missing the 2025 global targets	World Obesity Federation	2020
		2.	Moini J, Ahangari R, Miller C, Samsam M.	Global health complications of obesity	New York: Elsevier	2020
		3.	De Bruyne L, Pinna K.	Nutrition for health and health care	Boston: Cengage	2020
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Institute of Public Health	Dietary guidelines for the population of the Republic of Macedonia	IPH	2014
		2.	Kochubovski M, Ristovska G, Spiroski I, Petrova A.	Practicum of Hygiene and environmental health	UKIM Faculty of Medicine	2021
		3.	World Health Organization	Monitoring and restricting digital marketing of unhealthy products to children and adolescents	WHO	2019
		4.	World Health Organization	Report of the commission on ending childhood obesity	WHO	2016

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	ESSENTIALS AND BASIC IN AESTHETIC SURGERY			
2.	Code	MEDI 40			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of surgery			
5.	Degree of education (first, second, third cycle)	Integrated 6-year study			
6.	Academic year/semester	Year	Fifth (V)	Semester	Tenth (X)
7	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Smilja Gjorgova Tudzarova, PhD, MD			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject’s exam	Passed exam Surgery			
11.	Subject program goals (competences) and study results:	Students to become successful plastic and reconstructive and aesthetic surgeons			
12.	Subject content in details by chapters and units, with study results for every chapter	<p>Theoretical course: To introduced the students with the :</p> <ul style="list-style-type: none"><li>• Basic Principles of Aesthetic Surgery</li><li>• Basic distinctions between plastic, reconstructive and microsurgery</li><li>• Basic Skills</li><li>• Basic of the surgical kits for suture</li></ul> <p>Practical course: working in small operation theatre one day surgery under supervizor</p>			
13	Interconnection between subjects	Related to all subjects in the study program			
14.	Description of the subject’s study and working methods in details	Interactive teaching, lectures, practical laboratory lessons, project assignments, independent assignments, home study			
15.	Total available time frame	30 hours			
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours		5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours		10
		16.3.	Practice: hours		.
17.	Other forms of activities	17.1.	Project tasks: hours		5
		17.2.	Individual tasks: hours		/
		17.3.	Studying at home: hours		10
18	Requirements for signature				
19	Methods of assessment				
	19.1.	Tests: points		There is only oral exam	

	19.2.	Seminar paper/project, written and oral presentation: points			Students are assigned to do a seminar work,	
	19.3.	Final exam: points			/	
20	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process			Evaluation two ways		
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Neligan P, Matarasso PR	Plastic Surgery I – IV Vol.	New York: Elsevier	2018
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Townsend CM, Beauchamp D.	Sabiston textbook of surgery	New York: Saunders	2008

Number:41

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>AESTHETIC SURGERY –ADVANCED TRENDS</b>			
2.	<b>Code</b>	<b>MEDI 41</b>			
3.	<b>Study program</b>	General medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Surgery			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Tenth (X)
7.	<b>ECTS credits</b>				
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Smilja Tudjarova Gjorgova, PhD, MD			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Filled condition for X semester			

11.	Subject program goals (competences) and study results:	Students to become successful surgeons		
12.	Subject content in details by chapters and units, with study results for every chapter	Theoretical course: To introduced the students with the surgical aproaches for: Blepharoplasty, Rhinoplasty, Facelifting, TGL, Neck lifting, Lipofilling faciei et corporis, Liposuctio faciei et corporis, Breast surgery, Abdominoplasty, Brachioplasty, Thight lifting, Transgender Surgery.  Practical lessons: Life Surgery		
13	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject’s study and working methods in details	Interactive lectures, and practical application of basic surgery skills		
15.	Total available time frame	30 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	10
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	5
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	
18	Requirements for signature	To be present on 51% of all lessons		
19	Methods of assessment			
	19.1.	Tests: points	There is only oral exam	
	19.2.	Seminar paper/project, written and oral presentation: points	Seminars are dedicated during the theoretical course, including no points, only (passed)	
	19.3.	Final exam: points	There is only oral exam	
20	Grading criteria (points/grade)	Up to 59 points		5 (five) (F)
		From 60 to 68 points		6 (six) (E)
		From 69 to 76 points		7 (seven) (D)
		From 77 to 84 points		8 (eight) (C)
		From 85 to 92 points		9 (nine) (B)
		From 93 to 100 points		10 (ten) (A)
21.	Methods of monitoring the quality of the teaching process	Student anonymous evaluation of the subject, the teachers and collaborators participating in the teaching		

22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Neligan P, Matarasso PR	Plastic Surgery I – IV Vol.	New York: Elsevier	2018
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Townsend CM, Beauchamp D.	Sabiston textbook of surgery	New York: Saunders	2008

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>FORENSIC TRAUMATOLOGY</b>			
2.	<b>Code</b>	<b>MEDI 42</b>			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Surgery			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Tenth (X)
7.	<b>ECTS credits</b>	1			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. dr. Viktor Kamiloski, PhD, MD			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Filled condition for X semester			
11.	<b>Subject program goals (competences) and study results:</b>	<p>The goal of the subject program in the subject Forensic Traumatology is to enable students to acquire in-depth knowledge of expertise in the field of traumatology that is performed for the needs of court proceedings, as well as with specific skills for applying that knowledge in practice. Special tasks of this program are:</p> <ul style="list-style-type: none"> <li>to enable students to independently identify and critically analyze the basics of trauma expertise for the needs of court proceedings.</li> <li>to develop skills for applying the acquired knowledge in practice.</li> </ul>			



		<ul style="list-style-type: none"> <li>to independently perform a medical examination on the injured and for the needs of the medical expertise.</li> </ul> <p>To achieve these goals and tasks, the subject program will process the theoretical aspects of the traumatological expertise, and then will focus on their practical application.</p>		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p>The content of this elective includes three sections:</p> <ol style="list-style-type: none"> <li>General part: Introduction and concept. The history of medical expertise. Acquaintance of medical experts with different forms of non-material damage. Expert and expertise. Medical qualification of bodily injuries. Medical-traumatological examination of the injured in a traffic accident. Objectification of the resulting permanent consequences with trauma point systems (scores). The role of the traumatologist in the examination of physical pain, fear, aesthetic impairment and daily activities. The role of the traumatologist in insurance claims.</li> <li>Special part: Forensic-traumatological expertise of the musculoskeletal system-upper and lower extremity; Injuries of the spinal column and pelvis in forensic traumatological examinations; Craniocerebral injuries and injuries to the facial region in expert examinations; Expertise on thoracic and abdominal injuries; Expertise on the consequences of skin injuries and burns.</li> <li>Practicum on measurement of range of motion of joints (ROM) and objectification of disability. Measurement of upper (shoulder, elbow, wrist) and lower limb (hip, knee, ankle) movements, spine (neck and lower back) and pelvis.</li> </ol> <p>Acquaintance with the basic principles of forensic-traumatological expertise. Formulation and setting of the same and the role of the expert in preparation of the expert's evaluation report and opinion for the needs of non-material and insurance claims</p>		
13	<b>Interconnection between subjects</b>	Related to all subjects in the study program		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive lectures, reviewing of scientific literature, independent preparation of seminar paper		
15.	<b>Total available time frame</b>	30 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15
18	<b>Requirements for signature</b>	Completed practical lessons and accepted seminar paper		
19	<b>Methods of assessment</b>			

	19.1.	Tests: points			40-60	
	19.2.	Seminar paper/project, written and oral presentation: points			20-40	
	19.3.	Final exam: points				
20	Grading criteria (points/grade)			Up to 59 points	5 (five) (F)	
				From 60 to 68 points	6 (six) (E)	
				From 69 to 76 points	7 (seven) (D)	
				From 77 to 84 points	8 (eight) (C)	
				From 85 to 92 points	9 (nine) (B)	
				From 93 to 100 points	10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process			Student anonymous evaluation of the subject and the teachers and associates who participate in teaching		
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Browner BD, Jupiter JB, Levine AM, Trafton PG	Seletal trauma. 4th edition.	Philadelphia: Elsevier Science - Saunders	2008
		2.	Lerner A, Reis D, Soudry M.	Severe Injuries to the Limbs: Staged Treatment	Berlin Heidelberg New York: Springer	2007
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
2.		European Transport Safety Council.	Transport safety performance in the EU: a statistical overview.	Brussels: European Transport Safety Counc	2003	

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>WRIST AND HAND SURGERY</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 43</b>			
<b>3.</b>	<b>Study program</b>	General medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Surgery			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Tenth (X)
<b>7.</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. dr. Viktor Kamiloski, PhD, MD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Filled condition for X semester			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	Introduction to the wrist and hand surgery			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p>Content of the subject program:</p> <ul style="list-style-type: none"> <li>historical perspectives of the arm and hand injuries, epidemiology - applied surgical anatomy of the arm and hand. Biomechanics and kinematics of the wrist. Graphic representation and photographs of surgical approaches</li> <li>diagnostic procedures for wrist and hand injuries (X-ray, CT, MRI, ultrasound, EMG, etc.),</li> <li>organization of an operating room for hand surgery, regional block anesthesia, RIVA and local anesthesia with technique,</li> <li>distal radius fractures, classification systems - tests to assess the outcome of distal radius fractures (radiological, functional and subjective),</li> <li>surgical treatment of distal radius fractures,</li> <li>malunion of distal radius fractures and corrective osteotomies. Treatment of complications of distal radius fractures,</li> <li>wrist arthroscopy,</li> <li>-soft tissue associated wrist injuries (TFCC, SLIO, LTIO)</li> <li>injuries of the distal radioulnar joint. Surgical treatment and operative techniques,</li> <li>fractures and dislocations of carpal bones (Dg and treatment of fractures and nonunion of the scaphoid bone. Dg and treatment of lunate dislocations. Dislocations and instability of the carpus DISI, VISI),</li> <li>fractures of the metacarpal bones and phalanges of the hand, diagnosis, indications, surgical treatment,</li> </ul>			

		<ul style="list-style-type: none"><li>• compressive neuropathies of the median nerve, ulnar nerve,</li><li>• complex regional pain syndrome, diagnosis and treatment,</li><li>• Dupuytren’s and other contractures, osteoarthritis, rheumatoid arthritis of the hand, possibilities for corrective surgical interventions,</li><li>• modern rehabilitation program and exercises for wrist and hand injuries,</li><li>• soft tissue and tendon injuries of the hand with reconstruction and replantation,</li><li>• - infections of the arm and hand</li></ul>		
13	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject’s study and working methods in details	Interactive lectures, reviewing of scientific literature, independent preparation of seminar paper		
15.	Total available time frame	180		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	5
		17.2.	Individual tasks: hours	5
		17.3.	Studying at home: hours	5
18	Requirements for signature	Completed practical lessons and accepted seminar paper		
19	Methods of assessment			
	19.1.	Tests: points		40 - 60
	19.2.	Seminar paper/project, written and oral presentation: points		20- 40
	19.3.	Final exam: points		
20	Grading criteria (points/grade)	Up to 59 points	5 (five) (F)	
		From 60 to 68 points	6 (six) (E)	
		From 69 to 76 points	7 (seven) (D)	
		From 77 to 84 points	8 (eight) (C)	
		From 85 to 92 points	9 (nine) (B)	
		From 93 to 100 points	10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process	Student anonymous evaluation of the subject and the teachers and associates who participate in teaching		
22.	Literature			

	<b>22.1.</b>	<b>Mandatory literature</b>				
		Number	Author	Title	Publisher	Year
		1.	David Slutsky	Principles and practice of wrist surgery	Philadelphia: Saunders	2010
		2.	Green et al.	Green's operative hand surgery	New York: Elsevier	2005
	<b>22.2.</b>	<b>Additional literature</b>				
		Number	Author	Title	Publisher	year
		1.	Jupiter J, Ring D	AO Manual of fracture management: Hand and Wrist	New York: Thieme	2004

Number:44

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	<b>MORPHO-FUNCTIONAL CHARACTERISTICS OF SPERMATOZOA</b>			
2.	Code	<b>MEDI 44</b>			
3.	Study Program	General Medicine			
4.	Institution (Unit, Institute, Chair, Department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Medical Histology and Embryology			
5.	Degree of education (first,second or third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Second (II)	Semester	Fourth (IV)
7.	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Ass. Prof. Irena Kostadinova Petrova, M.D. PhD			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Passed exam in Histology and Embryology 2 Final exam: To apply for final exam, student has to submit seminar paper in word and power point format.			
11.	Subject program goals (competences) and study results:	<ul style="list-style-type: none"> <li>Study of the structural and functional characteristics of sperm in human ejaculate</li> <li>Microscopic analysis of the sperm population on native and dyed preparations.</li> </ul>			

12.	<b>Subject content in details by chapters and units, with study results for every chapter</b> <b>Theoretical and laboratory practice classes:</b>  -	<ul style="list-style-type: none"> <li>• Spermatogenesis and spermiogenesis</li> <li>• Morphologic characteristics of spermatozoa</li> <li>• Methods for determining the concentration of sperm in the ejaculate</li> <li>• Methods for determining the motility of sperm in the ejaculate</li> <li>• Methods for determining the morphology of sperm in the ejaculate</li> <li>• Deviations from normal morpho-functional characteristics of sperm and the appearance of oligozoospermia, asthenozoospermia and teratozoospermia</li> <li>• Microscopic analysis of the sperm population on native preparations</li> <li>• Microscopic analysis of the sperm population on dyed preparations</li> </ul> Seminar papers/project: Selected parts of morpho-functional characteristics of spermatozoa
13.	<b>Interconnection between subjects</b>	
14.	<b>Description of the subject's study and working methods in details</b>	<ul style="list-style-type: none"> <li>• Through visual presentation during accentuated concept lectures, study-goal oriented learning and interactive teaching.</li> <li>• Through microscopic analyses of spermatozoa (workshop)</li> <li>• Through seminar projects</li> </ul>
15.	<b>Total available time frame:</b>	30 hours
16.	<b>Forms of teaching activities</b>	16.1. Lectures - theoretical lessons, hours 5
		16.2. Practical lessons (laboratory, auditory), seminars, team work: hours 10
		16.3. Practice: hours
17.	<b>Other forms of activities</b>	17.1. Projects tasks: hours
		17.2. Individual tasks: hours 5
		17.3. Studying at home learning 10
18.	<b>Requirement for signature</b>	Conditional criteria for signature:  To take active participation in all the teaching activities.  The final exam is a combination of both seminar paper, workshop and final examination.

		The grade for the entire exam is obtained according to the table of grades and based on the sum of the points gained in all the activities including the continual assessment.				
19.	Method of assessment					
	19.1	Tests: points				
	19.2	Seminar paper/project, written and oral presentation: points				
	19.3	Final exam:	Oral presentation 15-25 points The final exam is a combination of both seminar paper, workshop and final examination.  (power point presentation of one topic from the workshop material)  (word document on the same topic)  The grade for the entire exam is obtained according to the table of grades and based on the sum of the points gained in all the activities including the continual assessment.			
20.	Grading criteria (points / grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Method of monitoring the quality of teaching process		Anonymous student’s evaluation of the subject, teachers and collaborators involved in the educational activities			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Ross MH, Wojciech P	Histology, Text and atlas	Philadelphia: Lippincott, Williams and Wilkins	2023
		2.	Junqueira JK, Carneiro H	Basic histology, Text and atlas	Chicago: McGraw Hill	2021
		3.	Moore KL, Persaud TVN	The developing human Clinically oriented embryology	Mumbai: Elsevier	2012
		4.	Teaching materials on English for students prepared by the faculty			
22.2.	Additional literature					

		Number	Author	Title	Publisher	Year
		1.	Bojovic S.	Andrologija, plodnost i neplodnost muskarca	Niksic: NIO"Univerzitetstva rijec"	1986
		2.	www.histologyguide.com	on-line learning programme		
		3.	www.biolumida.com	on-line learning programme		

Number:45

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	MANAGEMENT OF CORONAVIRUS DISEASE 2019 (COVID-19) IN HOSPITALIZED PATIENTS			
2.	Code	MEDI 45			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Infectology			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Fourth (IV)	Semester	Seventh(VII)
7.	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Associate Prof.Krsto Grozdanovski, PhD, MD			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Criteria meet for enrollment of the seventh semester. In order to take the final exam, the student should obtain the minimum points from theoretical course, practical lessons and seminar.			
11.	Subject program goals (competences) and study results:	Studying the characteristics and possibilities of treating COVID-19 in hospital patients with a severe/critical form of the disease			
12.	Subject content in details by chapters and units, with study results for every chapter	Theoretical teaching <ul style="list-style-type: none"><li>Evaluation of clinical and laboratory characteristics of patients with COVID-19 associated with a severe clinical picture</li><li>General therapeutic approach and possibilities for specific therapy</li><li>Sepsis in patients with COVID-19</li><li>Treatment of hypoxia, acute respiratory distress syndrome and other complications</li><li>Management of pregnant women</li></ul>			



		• Access to patients with HIV Hands-on teaching: Management of patients with COVID-19 Seminar: Selected parts of SARS-CoV-2 infection		
13	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject's study and working methods in details	Interactive teaching during lectures and practical trainings, seminars		
15.	Total available time frame	30 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	5 hours 5 hours
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 hours
18	Requirements for signature	<b>Obligatory criteria:</b> In order to get a professor's signature the students has to attend theoretic and practical studies, as well as seminars and to gain minimum points.		
19	<b>Methods of assessment</b>			
	19.1.	Tests: points		
	19.2.	Seminar paper/project, written and oral presentation: points	max Seminar work* 30	min- points 25-
		Active participation	max Theoretic lectures* 10-20 Practical lectures** 10-20  * presence in the theoretical course 51%-60% 1 point 61%-70% 1,5 points 71%-85% 2 points 86%- 100% 2,5 points	min-
	19.3.	Final exam: points	18-	
20	Grading criteria (points/grade)	Up to 59 points	5 (five) (F)	
		From 60 to 68 points	6 (six) (E)	
		From 69 to 76 points	7 (seven) (D)	

		From 77 to 84 points	8 (eight) (C)			
		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process	Anonymous student evaluation about the subject of study as well as evaluation of the professors and assistant-professors enrolled in the subject studies.				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Cohen J, Powderly WG, Opal SM.	Infectious Diseases, 4 <sup>th</sup> edition	New York: Elsevier	2017
		2.	Bennett JE, Dolin R, Blaser MJ	Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases	New York: Elsevier	2019
	22.2.	Additional literature				
		Numbe	Author	Title	Publisher	Year
		1.	World Health Organization	Clinical management of COVID-19	World Health Organization	2020
		1.	Centers for Disease Control and Prevention	2019 Novel coronavirus, Wuhan, China. Information for Healthcare Professionals	CDC	2020
		2.	Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson JL	Harrison`s Principles of Internal Medicine 21th edition	Chicago: McGraw Hill	2022

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>COVID 19 AND INFLUENZA SIMILARITIES AND DIFFERENCES</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 46</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Infectology			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Fourth (IV)	Semester	Seventh(VII)
<b>7.</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Associate Prof. Marija Cvetanovska PhD, MD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Criteria meet for enrollment of the seventh semester. In order to take the final exam, the student should obtain the minimum points from theoretical course, practical lessons and seminar.			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>Studying the characteristics, similarities and differences between two viral diseases, Covid and Influenza, in order to diagnose them more easily.</li> <li>Demonstration and practical work of cases with Influenza and comparison with the clinical picture, diagnosis and therapy of both diseases.</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>Clinical and epidemiological characteristics of Covid and Influenza similarities and differences</li> <li>Characteristics of pathogenetic mechanisms in the occurrence of both diseases</li> <li>Human immune response and susceptibility to infection</li> <li>Historical overview of epidemics and pandemics in influenza, causes and manner of their occurrence</li> <li>Diagnostic protocol for Covid and Influenza</li> <li>Possibilities and availability of antiviral therapy in Covid 19</li> <li>Possibilities and benefits of the application of immunomodulatory therapy in Covid 19</li> <li>Immunoprophylaxis - Vaccine prophylaxis</li> <li>Prevention of Covid 19 and Influenza</li> <li>Clinical characteristics and severity of the clinical picture of Covid 19 and Influenza in childhood</li> <li>Factors affecting the severity of the clinical picture</li> </ul>			

		• Covid 19 and Influenza - therapeutic approach Practical teaching: Treatment of patients with Influenza. Seminar: Selected parts of Covid 19 and Influenza. Practical course Mastering the clinical skills and usage of the acquired theoretical knowledge		
13	Interconnection between subjects	Related to all subjects in the study program		
14.	Description of the subject's study and working methods in details	Interactive teaching during lectures and practical trainings, seminars		
15.	Total available time frame	30 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	5 5
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 hours
18	Requirements for signature	<b>Obligatory criteria:</b> In order to get a professor's signature the students has to attend theoretic and practical studies, as well as seminars and to gain minimum points.		
19	Methods of assessment			
	19.1.	Tests: points		
	19.2.	Seminar paper/project, written and oral presentation: points	min-max Seminar work* 25-30	points
		Active participation	min-max Theoretic lectures* 10-20 Practical lectures** 10-20  * presence in the theoretical course 51%-60% 1 point 61%-70% 1,5 points 71%-85% 2 points 86%- 100% 2,5 points	points  points
	19.3.	Final exam: points	18-30	
20	Grading criteria (points/grade)	Up to 59 points	5 (five) (F)	
		From 60 to 68 points	6 (six) (E)	

		From 69 to 76 points	7 (seven) (D)			
		From 77 to 84 points	8 (eight) (C)			
		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21.	Methods of monitoring the quality of the teaching process	Anonymous student evaluation about the subject of study as well as evaluation of the professors and assistant-professors enrolled in the subject studies.				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Cohen J, Powderly WG, Opal SM.	Infectious Diseases, 4 <sup>th</sup> edition	New York: Elsevier	2017
		2.	Bennett JE, Dolin R, Blaser MJ	Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases	New York: Elsevier	2019
		3.	Centers for Disease Control and Prevention	2019 Novel coronavirus, Wuhan, China. Information for Healthcare Professionals	CDC	2020
	22.2.	Additional literature				
		Number	Author	Title	Publisher	Year
		2.	World Health Organization	Clinical management of COVID-19	World Health Organization	2020
		3.	Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson JL	Harrison's Principles of Internal Medicine 21 <sup>th</sup> edition	Chicago: McGraw Hill	2022

Number:47

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>SLEEP DISORDERS AND INSOMNIA</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 47</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Department of psychiatry and medical psychology			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
<b>6.</b>	<b>Academic year/semester</b>	Year	Fourth (IV)	Semester	Eighth (VIII)
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Nensi Manusheva, PhD, MD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Related to all subjects in the study program			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>• Acquiring knowledge about sleep medicine</li> <li>• Diagnostic process of sleep disorders</li> <li>• Classification of sleep disorders in ICD-10/ ICD-11 and ICSD-3</li> <li>• Pharmacological and non-pharmacological treatment</li> <li>• Cognitive behavior therapy for insomnia</li> </ul>			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Chronobiology,</li> <li>• Physiology of sleep</li> <li>• Clasifficaton, diagnostics and treatment of sleep diorders</li> <li>• Polisomnography/actigraphy</li> </ul> Practical lessons and exercises: <ul style="list-style-type: none"> <li>• taking detailed history</li> <li>• sleep diary</li> <li>• use of scales for evaluation (e.g. ESS, etc)</li> </ul>			
<b>13</b>	<b>Interconnection between subjects</b>	Related to all subjects in the study program			
<b>14.</b>	<b>Description of the subject's study and working methods in details</b>	Lectures, Interactive courses, Seminars, Project activities, Presentations			
<b>15.</b>	<b>Total available time frame</b>	30 hours			
<b>16.</b>	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5	
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10	
		16.3.	Practice: hours		

17.	Other forms of activities		17.1.	Project tasks: hours	5	
			17.2.	Individual tasks: hours	5	
			17.3.	Studying at home: hours	5	
18	Requirements for signature		Regular attending of teaching courses and practical lessons and continuous test (minimum 60%)			
19	Methods of assessment					
	19.1.	Tests: points			/	
	19.2.	Seminar paper/project, written and oral presentation: points			10-20	
	19.3.	Final exam: points			41-80	
20	Grading criteria (points/grade)			Up to 59 points	5 (five) (F)	
				From 60 to 68 points	6 (six) (E)	
				From 69 to 76 points	7 (seven) (D)	
				From 77 to 84 points	8 (eight) (C)	
				From 85 to 92 points	9 (nine) (B)	
				From 93 to 100 points	10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process			Revising knowledge and student reflections. Student anonymous evaluation of the subject and the teachers and associates who participate in teaching		
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Kaplan & Sadock	Kaplan & Sadock’s Comprehensive textbook of psychiatry (vol. 1) Eight edition	Philadelphia: Lippincott & Williams	2005
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	WHO	ICD-11 (07 – Sleep-wake disorders)	WHO	2023
		2.	Manusheva N.	Authorized lectures at the Department for psychiatry and medical psychology		

Number:48

Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	<b>IMAGING IN SPORT INJURIES OF MUSCULOSKELETAL SYSTEM</b>			
2.	Code	MEDI 48			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Radiology			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	Fourth (IV)	Semester	Eighth (VIII)
7.	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Prof. Violeta Vasilevska Nikodinovska, PhD, MD			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Passed exam of Radiology. Before taking the final exam, the student should submit a seminar paper in a written form and prepare a PPT presentation.			
11.	Subject program goals (competences) and study results:	<b>Aims of the course program (competences):</b> Student should obtain knowledge for sports injuries of all joints of the extremities, with its presentation on plain film, CT and MRI			
12.	Subject content in details by chapters and units, with study results for every chapter	<b>Contents of the course program:</b> <b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Sports injuries of the shoulder</li> <li>• Elbow injuries</li> <li>• Hand and wrist injuries</li> <li>• Sports injuries of the hip</li> <li>• Knee injuries,</li> <li>• Ankle and foot injuries</li> </ul> <b>Practical course:</b> Protocols for examination of sports injuries on each joint.  <b>Seminar paper:</b> Case presentation with differential diagnosis			
13.	Interconnection between subjects	Related to all subjects in the study program			
14.	Description of the subject's study and working methods in details	Interactive teaching (theory), practical exercises, seminar paper			
15.	Total available time frame	30 hours			
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5 hours	



		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	Exercises 5 hours Seminars 5 hours		
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours			
17.2.		Individual tasks: hours				
17.3.		Studying at home: hours	15 hours			
18	Requirements for signature	<b>Requirements for signature</b> <b>Conditional criteria:</b> In order to get a signature, a student needs to attend theoretical, practical classes and seminars as well as to obtain a minimum number of points. Theoretical course 4-10 points Practical course 4-10 points				
19	<b>Methods of assessment</b>					
	19.1.	Tests: points	min.-max. 12 - 20			
	19.2.	Seminar paper/project, written and oral presentation: points	min.- max. Seminar paper points 25 - 35			
	19.3.	Final exam: points	min.- max. Oral exam points 15 – 25			
20	<b>Grading criteria (points/grade)</b>		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	<b>Methods of monitoring the quality of the teaching process</b>		Students’ anonymous evaluation of the subject, the teachers and the associates participating in the teaching process			
22.	<b>Literature</b>					
	22.1.	<b>Mandatory literature</b>				
		Number	Author	Title	Publisher	Year
		1.	Stoller DW, Tirman P, Bredella M, Beltran S, Bransetter R, Blease S	Diagnostic Imaging Orthopedics	Solt Lake City: AMIRSYS	2006

		2.	Manaster BJ, Andrews C, Crim J, Grossman J, Miller T, Petersilge C, Roberts C, Rosenberg Z, Sanders RK	Diagnostic and surgical imaging anatomy. Musculoskeletal	Solt Lake City: AMIRSYS	2006
		<b>Additional literature</b>				
		Number	Author	Title	Publisher	Year
	22.2.	1.	Shahabpour M, Isaac A, De Jonge M.	MRI wrist and hand	Horn: Breitenseher Publisher	2018

Number:49

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>IMAGING OF MUSCULOSKELETAL BONE TUMORS</b>			
2.	<b>Code</b>	<b>MEDI 49</b>			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Radiology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Fifth (V)	Semester	Ninth (IX)
7.	<b>ECTS credits</b>	1			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Violeta Vasilevska Nikodinovska, PhD, MD			
9.	<b>Language of the study</b>	English			
10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Passed exam of Radiology. Before taking the final exam, the student should submit a seminar paper in a written form and prepare a PPT presentation.			
11.	<b>Subject program goals (competences) and study results:</b>	Aims of the course program (competences): Student to obtain knowledge for early diagnosis of bone tumor, differentiation of different type of bone tumors and according their imaging presentation			
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Contents of the course program:</b> <b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• Plain film for diagnosis of bone tumor</li> <li>• CT and MRI in diagnosis of bone tumors</li> </ul>			

		<ul style="list-style-type: none"><li>Systematic analysis of different types of bone tumors, imaging appearance, localization on the skeleton and within the bone, imaging presentation of each tumor an all imaging methods like plain film, CT and MRI</li><li>Imaging guided biopsy of bone tumors</li></ul> <p><b>Practical course:</b> Multidisciplinary team meetings attendance with active participation</p> <p><b>Seminar paper:</b> Case presentation with discussion of differential diagnosis.</p>		
13	Interconnection between subjects	Related to all other subjects		
14.	Description of the subject's study and working methods in details	Interactive teaching (theory), practical exercises, seminar paper		
15.	Total available time frame	30 hours		
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	Exercises 5 hours Seminars 5 hours
		16.3.	Practice: hours	
17.	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 hours
18	Requirements for signature	<b>Requirements for signature</b> <b>Conditional criteria:</b> In order to get a signature, a student needs to attend theoretical, practical classes and seminars as well as to obtain a minimum number of points. Theoretical course 4-10 points Practical course 4-10 points		
19	<b>Methods of assessment</b>			
	19.1.	Tests: points		min.- max. 12 - 20
	19.2.	Seminar paper/project, written and oral presentation: points		min.- max. Seminar paper points 25 - 35
	19.3.	Final exam: points		min.-max Oral exam points 15 - 25
20	<b>Grading criteria (points/grade)</b>		Up to 59 points	5 (five) (F)
			From 60 to 68 points	6 (six) (E)
			From 69 to 76 points	7 (seven) (D)
			From 77 to 84 points	8 (eight) (C)
			From 85 to 92 points	9 (nine) (B)
			From 93 to 100 points	10 (ten) (A)

21.	Methods of monitoring the quality of the teaching process	Students' anonymous evaluation of the subject, the teachers and the associates participating in the teaching process				
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Davies AM, Sundaram M, James SLJ	Imaging of bone tumors and tumor-like lesions	New York: Springer	2009
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Manaster BJ, Andrews C, Crim J, Grossman J, Miller T, Petersilge C, Roberts C, Rosenberg Z, Sanders R.K	Diagnostic and surgical imaging anatomy. Musculoskeletal	Solt Lake City: AMIRSYS	2006

Number:50

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	<b>Subject</b>	<b>MAGNETIC RESONANCE IMAGING OF THE SPINE</b>			
2.	<b>Code</b>	<b>MEDI 50</b>			
3.	<b>Study program</b>	General Medicine			
4.	<b>Institution (unit, institute, chair, department)</b>	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Radiology			
5.	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year studies			
6.	<b>Academic year/semester</b>	Year	Fourth (IV)	Semester	Seventh (VII)
7.	<b>ECTS credits</b>	1			
8.	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Violeta Vasilevska Nikodinovska, PhD, MD			
9.	<b>Language of the study</b>	English			

10.	<b>Preconditions for attending the classes and taking the subject's exam</b>	Passed exam of Radiology. Before taking the final exam, the student should submit a seminar paper in a written form and prepare a PPT presentation.		
11.	<b>Subject program goals (competences) and study results:</b>	Aims of the course program (competences): Student should obtain basic and advanced knowledge for radiological diagnosis of the spine, presentation of the diseases of the spine on magnetic resonance imaging and to become familiar to interventional procedures of the spine.		
12.	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<b>Contents of the course program:</b> <b>Theoretical course:</b> <ul style="list-style-type: none"> <li>• MR anatomy of the spine</li> <li>• Pathological conditions of the spine presented on MRI</li> <li>• Congenital anomalies.</li> <li>• Inflammation</li> <li>• Degenerative diseases</li> <li>• Tumors</li> <li>• Trauma</li> <li>• Interventional procedures of the spine</li> </ul> <b>Practical course:</b> <ul style="list-style-type: none"> <li>• Clinical application of MRI in diagnosis of the spine diseases</li> <li>• Clinical applications of spine basic protocols</li> <li>• Clinical applications of spine advanced protocol</li> <li>• Interventional procedures of the spine</li> </ul> <b>Seminar paper:</b> Case presentation with differential diagnosis discussion		
13	<b>Interconnection between subjects</b>	Related to all other subjects		
14.	<b>Description of the subject's study and working methods in details</b>	Interactive teaching (theory), practical exercises, seminar paper		
15.	<b>Total available time frame</b>	30 hours		
16.	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	Exercises 5 hours Seminars 5 hours
		16.3.	Practice: hours	
17.	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 hours
18	<b>Requirements for signature</b>	<b>Requirements for signature</b> <b>Conditional criteria:</b> In order to get a signature, a student needs to attend theoretical, practical classes and seminars as well as to obtain a minimum number of points.		

		Theoretical course 4-10 points Practical course 4-10 points				
19	Methods of assessment					
	19.1.	Tests: points			min.-max. 12 - 20	
	19.2.	Seminar paper/project, written and oral presentation: points			min.- max. Seminar paper points 25 - 35	
	19.3.	Final exam: points			min.-max. Oral exam points 15 - 25	
20	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Students' anonymous evaluation of the subject, the teachers and the associates participating in the teaching process			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Ross JS, Brant, Zawadzki, Moore, Crim, Chen, Katzman	Diagnostic Imaging Spine	Solt Lake City: AMIRSYS	2010
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Manaster BJ, Andrews C, Crim J, Grossman J, Miller T, Petersilge C, Roberts C, Rosenberg Z, Sanders R.K	Diagnostic and surgical imaging anatomy. Musculoskeletal	Solt Lake City: AMIRSYS	2006

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>ENDOCRINE DYSREGULATION, BIOMARKERS IN CARDIAC FAILURE AND TECHNIQUES OF VISUALISATION</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 51</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University in Skopje, Medical Faculty, Department of Pathophysiology and Nuclear Medicine			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year study			
<b>6.</b>	<b>Academic year/semester</b>	Year	Third (III)	Semester	Sixth (VI)
<b>7.</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Prof. Venjamin Majstorov, MD, PhD			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10.</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Exam of Pathophysiology 1, Signature of Pathophysiology 2			
<b>11.</b>	<b>Subject program goals (competences) and study results:</b>	To get introduced with the mechanisms of endocrine dysregulation and biomarkers in cardiac failure, possibilities for cardiac failure visualization and their application in practice			
<b>12.</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p><b>Theoretical course</b></p> <ul style="list-style-type: none"> <li>• Pathophysiology of endocrine disorders in cardiac failure and mechanisms of release of various biomarkers</li> <li>• Special review on pathophysiological mechanisms of symphatetic nervous system hyperreactivity in cardiac failure</li> <li>• Techniques of visualisation and quantification of cardiac symphatetic hyperreactivity</li> <li>• Application of visualisation techniques in risk stratification and cardiac failure prognosis</li> </ul> <p><b>Practical lessons</b></p> <ul style="list-style-type: none"> <li>• Discussion on disorders in cardiac failure, demonstration of some visualization techniques and their application</li> </ul> <p><b>Seminar</b></p> <ul style="list-style-type: none"> <li>• Disorders in cardiac failure-work on separate parts</li> </ul>			
<b>13.</b>	<b>Interconnection between subjects</b>				
<b>14.</b>	<b>Description of the subject's study and working methods in details</b>	Interactive teaching during lectures, writting and preparing presentation, independent study by using textbooks, computer assisted learning			
<b>15.</b>	<b>Total available time frame</b>	30 classes			
<b>16.</b>	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours		5 classes

		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10 classes		
		16.3.	Practice: hours			
		17.1.	Project tasks: hours			
17.	Other forms of activities	17.2.	Individual tasks: hours			
		17.3.	Studying at home: hours	15 classes		
		18 Requirements for signature				
		The student is required to actively follow all of the planned activities. Conditional criteria for assessment of knowledge: In order to get a signature, the student should obtain minimum points in both theoretical and practical courses.				
19	Methods of assessment					
	19.1.	Tests: points				
	19.2.	Seminar paper/project, written and oral presentation: points		min-max 40-60		
	19.3.	Final exam: points		min-max Written exam 25 - 35 Oral exam 15 - 25		
		Active participation: points		Theoretical course 10 - 20 Practical course 10 - 20		
20	Grading criteria (points/grade)		Up to 59 points	5 (five) (F)		
			From 60 to 68 points	6 (six) (E)		
			From 69 to 76 points	7 (seven) (D)		
			From 77 to 84 points	8 (eight) (C)		
			From 85 to 92 points	9 (nine) (B)		
			From 93 to 100 points	10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Anonymous evaluation by the students for the teaching staff.			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	O'Malley JP, Ziessman HA, Thrall JH.	Nuclear Medicine and Molecular Imaging: The Requisites	Elsevier	2020
		2.	Leonard S. Lilly	Pathophysiology of Heart Disease	Wolters Kluwer	2020



		3.				
		Additional literature				
		Number	Author	Title	Publisher	year
	22.2.	1.	McPhee SJ, Ganong WF:	Pathophysiology of disease. An introduction to clinical medicine	Langee medical Books/McGraw-Hill, New York	2003
		2.				
		3.				

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Attachment 3		Integrated cycle of studies – Subject program			
1.	Subject	VIRAL ACUTE UPPER RESPIRATORY INFECTIONS			
2.	Code	MEDI 52			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss Cyril and Methodius University, Medical Faculty, Department of Infectology			
5.	Degree of education (first, second, third cycle)	Integrated 6-year study			
6.	Academic year/semester	Year	Fourth (IV)	Semester	Seventh(VII)
7	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Assoc. Prof. d-r Marija Cvetanovska			
9.	Language of the study	English			
10	Preconditions for attending the classes and taking the subject's exam	Criteria meet for enrollment of the seventh semester			
11	Subject program goals (competences) and study results:	<ul style="list-style-type: none"> <li>Knowledge in the implementation of the diagnostic-therapeutic protocol for upper respiratory viral infections through the implementation of clinical, ecological and etiological principles, as well as the possibility of critical monitoring of scientific efforts from the field jeto na viral infekcii na respiratoryniot sistem.</li> </ul>			

12	<b>Subject content in details by chapters and units, with study results for every chapter</b>	<p>Theoretical teaching</p> <ul style="list-style-type: none"> <li>• Causes of upper respiratory infections</li> <li>• Epidemiological characteristics</li> <li>• Types of upper respiratory syndromes</li> <li>• Clinical characteristics of upper respiratory syndromes</li> <li>• Differential diagnosis of upper respiratory syndromes</li> <li>• Therapeutic approach in viral upper respiratory syndromes</li> <li>• Complications-types and their treatment</li> <li>• Cold syndrome</li> <li>• Febrile catarrh syndrome</li> <li>• Influenza syndrome</li> <li>• Diagnosis, therapy and prevention of Influenza</li> <li>• Influenza-historical facts</li> <li>• Prophylactic approach to upper respiratory infections</li> <li>• Seasonal influenza vaccine</li> </ul> <p>Practical teaching</p> <ul style="list-style-type: none"> <li>• Diagnostic protocol in a patient with upper respiratory syndrome</li> <li>• Virological follow-ups</li> <li>• Diagnostic tests for the detection of viral agents of upper respiratory infections</li> <li>• Therapy of upper respiratory viral infections</li> <li>• Criteria for monitoring, detection of complications and the need for their treatment</li> <li>• Criteria for hospitalization</li> </ul> <p>Seminars</p> <ul style="list-style-type: none"> <li>• Case processing and presentation</li> </ul>		
13	<b>Interconnection between subjects</b>			
14	<b>Description of the subject's study and working methods in details</b>	Interactive teaching during lectures and practical trainings, seminars		
15	<b>Total available time frame</b>	30 hours		
16	<b>Forms of teaching activities</b>	16.1.	Lessons – theoretical lessons, hours	5 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	5 hours 5 hours
		16.3.	Practice: hours	
17	<b>Other forms of activities</b>	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 hours
18	<b>Requirements for signature</b>	<p><b>Obligatory criteria:</b></p> <p>In order to get a professor's signature the students has to attend theoretic and practical studies, as well as seminars and to gain minimum points.</p>		

		In order to take the final exam the student has to pass the projected continuous assessments (colloquium in general infectology ). During the exams the students has to pass the previously failed Continuous assessments (colloquium in general infectology ) and then continue to the final exam.				
		The grade/score for the entire exam is obtained according the table of grades and based on the sum of the points gained in all the activities, Continuous assessments and final exam.				
19	Methods of assessment					
	19.1.	Tests: points				
	19.2.	Seminar paper/project, written and oral presentation: points			Seminar work*	min-max points 35-45
		Active participation			Tests (oral exam) * Activity and participation **	min-max points 15 -25 points 10-20
					* presence in the theoretical course 51%-60% 1 point 61%-70% 1,5 points 71%-85% 2 points 86%- 100% 2,5 points	
	19.3.	Final exam: points				
20	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21	Methods of monitoring the quality of the teaching process		Anonymous student evaluation about the subject of study as well as evaluation of the professors and assistant-professors enrolled in the subject studies.			
22	Literature					
	22.1.	Mandatory literature				
		Numbe r	Author	Title	Publisher	Year

		1.	Jonathan Cohen, William J. Powderly Steven	Infectology Volume 1 and Volume 2	New York: Elsevier	2017
		2.				
		3.	John E. Bennett, MD Raphael Dolin, MD Martin J. Blaser, MD	Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases Ninth Edition	<a href="https://t.me/MBS_MedicalBooksStore">https://t.me/MBS_MedicalBooksStore</a>	2020
	22.2.	Additional literature				
		Numbe	Author	Title	Publisher	Year
		1.	Chow AW, Benninger MS, Brook I, Brozek JL, Goldstein EJ, Hicks LA, Pankey GA, Seleznick M, Volturo G, Wald ER, File TM Jr;	Infectious Diseases Society of America. IDSA clinical practice guideline for acute bacterial rhinosinusitis in children and adults.	Clin Infect Dis. 2012 Apr;54(8):e72-e112. doi: 10.1093/cid/cir1043. Epub 2012 Mar 20. PMID: 22438350.	2012
		2.	Wong DM, Blumberg DA, Lowe LGAm	<b>. Guidelines for the use of antibiotics in acute upper respiratory tract infections.</b>	Fam Physician. 2006 Sep 15;74(6):956-66. PMID: 17002029.	2006
		3.	D Longo, A Fauci, DL Kasper, S Hauser, J Jameson, J Loscalzo	Harrison's Principles of INTERNAL MEDICINE (2 Vol Set) 18 edition		2011

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<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
<b>1.</b>	<b>Subject</b>	<b>SEPSIS AND SEPTIC SHOCK</b>			
<b>2.</b>	<b>Code</b>	<b>MEDI 53</b>			
<b>3.</b>	<b>Study program</b>	General Medicine			
<b>4.</b>	<b>Institution (unit, institute, chair, department)</b>	Ss Cyril and Methodius University, Medical Faculty, Department of Infectology			
<b>5.</b>	<b>Degree of education (first, second, third cycle)</b>	Integrated 6-year study			
<b>6.</b>	<b>Academic year/semester</b>	Year	Fourth (IV)	Semester	Seventh(VII)
<b>7</b>	<b>ECTS credits</b>	1			
<b>8.</b>	<b>Professor (when more professors, responsible professor is assigned)</b>	Assoc. Prof. d-r Krsto Grozdanovski			
<b>9.</b>	<b>Language of the study</b>	English			
<b>10</b>	<b>Preconditions for attending the classes and taking the subject's exam</b>	Criteria meet for enrollment of the seventh semester			
<b>11</b>	<b>Subject program goals (competences) and study results:</b>	<ul style="list-style-type: none"> <li>Objectives of the subject program (competencies): Gaining knowledge about sepsis and septic shock by getting to know the importance of timely diagnosis and initial therapy. Familiarity with the diagnosis of local infection, antimicrobial therapy, fluid therapy, the use of vasopressors, corticosteroids, supportive therapy, and their impact on the course and outcome of patients with sepsis and septic shock. Monitoring of scientific papers related to sepsis, critical approach to published results and assessment of possibilities and ways to reduce mortality and morbidity from sepsis in our environment.</li> </ul>			
<b>12</b>	<b>Subject content in details by chapters and units, with study results for every chapter</b>	Theoretical teaching Evolution and current definitions of sepsis Epidemiology, clinical picture, diagnosis and prognosis Pathophysiology Microorganisms causing sepsis Interpretation of cultures and antimicrobial therapy Mechanical ventilation in patients with sepsis Prophylaxis of deep vein thrombosis, nutrition, ulcer prophylaxis and glycemic control in a patient with sepsis Methods of treating hypotension in a patient with septic shock			

		New therapeutic approaches and therapy that is unnecessary and ineffective in sepsis Practical teaching Protocol for the diagnosis and therapy of sepsis and septic shock Monitoring and assessment of hemodynamic parameters in the septic patient Assessment of the need and method of fluid therapy Interpretation of biological markers and acid-base status Assessment of de-escalation of antimicrobial therapy Seminars Case processing and presentation		
13	Interconnection between subjects			
14	Description of the subject's study and working methods in details	Interactive teaching during lectures and practical trainings, seminars		
15	Total available time frame	30 hours		
16	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5 hours
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	5 hours 5 hours
		16.3.	Practice: hours	
17	Other forms of activities	17.1.	Project tasks: hours	
		17.2.	Individual tasks: hours	
		17.3.	Studying at home: hours	15 hours
18	Requirements for signature	<b>Obligatory criteria:</b> In order to get a professor's signature the students has to attend theoretic and practical studies, as well as seminars and to gain minimum points.  In order to take the final exam the student has to pass the projected continuous assessments (colloquium in general infectology ). During the exams the students has to pass the previously failed Continuous assessments (colloquium in general infectology ) and then continue to the final exam.  The grade/score for the entire exam is obtained according the table of grades and based on the sum of the points gained in all the activities, Continuous assessments and final exam.		
19	Methods of assessment			
	19.1.	Tests: points		
	19.2.	Seminar paper/project, written and oral presentation: points	Seminar work* points	min-max 35-45
		Active participation	Tests (oral exam) * points Activity and participation ** points	min-max 15 -25 10-20

			* presence in the theoretical course 51%-60%      1 point 61%-70%      1,5 points 71%-85%      2 points 86%- 100%    2,5 points			
	19.3.	Final exam: points				
20	Grading criteria (points/grade)	Up to 59 points	5 (five) (F)			
		From 60 to 68 points	6 (six) (E)			
		From 69 to 76 points	7 (seven) (D)			
		From 77 to 84 points	8 (eight) (C)			
		From 85 to 92 points	9 (nine) (B)			
		From 93 to 100 points	10 (ten) (A)			
21	Methods of monitoring the quality of the teaching process		Anonymous student evaluation about the subject of study as well as evaluation of the professors and assistant-professors enrolled in the subject studies.			
22	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Jonathan Cohen, William J. Powderly Steven	Infectology Volume 1 and Volume 2	New York: Elsevier	2017
		2.	John E. Bennett, MD Raphael Dolin, MD Martin J. Blaser, MD	Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases Ninth Edition	<a href="https://t.me/MBS_MedicalBooks">https://t.me/MBS_MedicalBooks</a> Store	2020
		Additional literature				
22.2.	Numbe	Author	Title	Publisher	Year	

		1.	Alhazzani W, Evans L, Alshamsi F, Möller MH, Ostermann M, Prescott HC, et al Antonelli M, Rhodes A.	Surviving Sepsis Campaign Guidelines on the Management of Adults With Coronavirus Disease 2019 (COVID-19) in the ICU: First Update.	Crit Care Med. 2021 Mar 1;49(3):e219-e234. doi: 10.1097/CCM.00000000000004899. PMID: 33555780.	2021
		2.	Evans L, Rhodes A, Alhazzani W, Antonelli M, Coopersmith CM, et al Nunnally M, Oczkowski S, Osborn T, Papathanassoglou E, Perner A, Puskarich M, Roberts J, Schweickert W, Seckel M, Sevransky J, Sprung CL, Welte T, Zimmerman J, Levy M.	. Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock 2021	Crit Care Med. 2021 Nov 1;49(11):e1063-e1143. doi: 10.1097/CCM.00000000000005337. PMID: 34605781.	2021
		3.	D Longo, A Fauci, DL Kasper, S Hauser, J Jameson, J Loscalzo	Harrison's Principles of INTERNAL MEDICINE (2 Vol Set) 18 edition		2011



Number:54

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	Subject	<b>MINIMALLY INVASIVE SURGERY</b>			
2.	Code	<b>MEDI 54</b>			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Surgery			
5.	Degree of education (first, second, third cycle)	Integrated 6-year study			
6.	Academic year/semester	Year	Fifth (V), sixth (VI)	Semester	Tenth (X), Eleventh (XI), Twelfth (XII)
7	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Associate Prof. Svetozar Antovikj, PhD, MD			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Passed exam Surgery			
11.	Subject program goals (competences) and study results:	To become familiar with the basic principles of minimally invasive surgery.			
12.	Subject content in details by chapters and units, with study results for every chapter	<b>Theoretical course:</b> To introduced the students with: Basic equipment for minimally invasive surgery Physiology of pneumoperitoneum Basic surgical procedures in laparoscopy Benefits and pitfalls of minimal invasive surgery  Practical course: working in small operation theatre one day surgery under supervisor			
13	Interconnection between subjects	Related to all subjects in the study program			
14.	Description of the subject's study and working methods in details	Interactive teaching, lectures, practical laboratory lessons, project assignments, independent assignments, home study			
15.	Total available time frame	30 hours			
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours	5	

		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours	10		
		16.3.	Practice: hours	10.		
17.	Other forms of activities	17.1.	Project tasks: hours	5		
		17.2.	Individual tasks: hours	/		
		17.3.	Studying at home: hours	/		
18	Requirements for signature	In order to get a signature, the student needs to attend the theoretical and practical classes.				
19	Methods of assessment					
	19.1.	Tests: points				
	19.2.	Seminar paper/project, written and oral presentation: points		Students are assigned to do a seminar work		
	19.3.	Final exam: points				
20	Grading criteria (points/grade)	Up to 59 points		5 (five) (F)		
		From 60 to 68 points		6 (six) (E)		
		From 69 to 76 points		7 (seven) (D)		
		From 77 to 84 points		8 (eight) (C)		
		From 85 to 92 points		9 (nine) (B)		
		From 93 to 100 points		10 (ten) (A)		
21.	Methods of monitoring the quality of the teaching process		Evaluation two ways			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year
		1.	Hunter J, Spight D, Sandone, Fairman J	Atlas of Minimally Invasive Surgical Operations 1st Edition	Chicago: McGraw-Hill Professional	2013
		Additional literature				
	22.2.	Number	Author	Title	Publisher	year
		1.	Townsend CM, Beauchamp D.	Sabiston textbook of surgery	New York: Elsevier	2021

<b>Attachment 3</b>		<b>Integrated cycle of studies – Subject program</b>			
1.	Subject	<b>EPILEPTIC SYNDROMES</b>			
2.	Code	<b>MEDI 55</b>			
3.	Study program	General Medicine			
4.	Institution (unit, institute, chair, department)	Ss. Cyril and Methodius University in Skopje, Faculty of Medicine, Department of Neurology			
5.	Degree of education (first, second, third cycle)	Integrated 6-year studies			
6.	Academic year/semester	Year	IV	Semester	VIII
7.	ECTS credits	1			
8.	Professor (when more professors, responsible professor is assigned)	Prof d-r Gordana Kiteva-Trenchevska			
9.	Language of the study	English			
10.	Preconditions for attending the classes and taking the subject's exam	Signature from Neurology To enter the exam, seminar work (writing text and presenting) is needed			
11.	Subject program goals (competences) and study results:	<ul style="list-style-type: none"> <li>• The students will achieve competences to classify epileptic seizures, epilepsies and epileptic syndromes</li> <li>• The students will achieve competences to diagnose different epileptic syndromes ( idiopathic, symptomatic, pharmacoresponsive and pharmacoresistant)</li> <li>• The students will achieve competences to diagnose specific comorbidities of different epileptic syndromes</li> <li>• The students will achieve competences to select appropriate treatment for different epileptic syndromes and their comorbidities</li> </ul>			
12.	Subject content in details by chapters and units, with study results for every chapter	<ul style="list-style-type: none"> <li>• ILAE classification of seizures, epilepsies and epileptic syndromes</li> <li>• Idiopathic epileptic syndromes</li> <li>• Symptomatic epileptic syndromes</li> <li>• Epileptic developmental encephalopathies</li> <li>• Epileptic syndromes in different age groups ( newborns, infants, toddlers, children and adolescents, adults)</li> <li>• EEG in diagnosis of epileptic syndromes</li> <li>• Neuroimaging in epileptic syndromes</li> <li>• Genetics in epileptic syndromes</li> <li>• Neuropsychology in epileptic syndromes</li> <li>• Cognitive functioning in epileptic syndromes</li> <li>• Pharmacological treatment of epileptic syndromes</li> <li>• Pharmacoresistance in epileptic syndromes</li> <li>• Non-pharmacological treatment of epileptic syndromes</li> <li>• Therapeutic drug monitoring of antiseizure drugs</li> </ul>			

13	Interconnection between subjects	Neurology, epileptology, electroencephalography, neuroimaging, neuropsychology, cognition, genetics, pharmacological and non-pharmacological treatment				
14.	Description of the subject’s study and working methods in details	Theoretical course: Lectures, presentation, discussions, questions Practical course: small group work with different epileptic syndromes, different diagnostic methods, different therapeutic options; problem solving tasks in different epileptic syndromes Seminars: individual and group work project on special epileptic syndromes Presentation skills exercises				
15.	Total available time frame					
16.	Forms of teaching activities	16.1.	Lessons – theoretical lessons, hours			5
		16.2.	Practical lessons (laboratory, auditory), seminars, team work: hours			10
		16.3.	Practice: hours			
17.	Other forms of activities	17.1.	Project tasks: hours			5
		17.2.	Individual tasks: hours			5
		17.3.	Studying at home: hours			5
18	Requirements for signature	Active participation in all planned activities ( theoretical course, practical course, seminars, presentation skills exercising) Final mark is formed by summarizing the points of all planned activities				
19	Methods of assessment					
	19.1.	Tests: points				15-25
	19.2.	Seminar paper/project, written and oral presentation: points				25-35
	19.3.	Final exam: points				20-40
20	Grading criteria (points/grade)		Up to 59 points		5 (five) (F)	
			From 60 to 68 points		6 (six) (E)	
			From 69 to 76 points		7 (seven) (D)	
			From 77 to 84 points		8 (eight) (C)	
			From 85 to 92 points		9 (nine) (B)	
			From 93 to 100 points		10 (ten) (A)	
21.	Methods of monitoring the quality of the teaching process		Anonymous student’s evaluation			
22.	Literature					
	22.1.	Mandatory literature				
		Number	Author	Title	Publisher	Year

		1.	Panayiotopoulos C.	A clinical guide to epileptic syndromes and their treatment	London: John Libbey & Co. Ltd, Springer Healthcare Ltd	2002
	22.2.	Additional literature				
		Number	Author	Title	Publisher	year
		1.	Arielle Crespel, Philippe Gelisse	Atlas of EEG	John Libbey	2005
		2.	<a href="http://www.epileptic.org">www.epileptic.org</a>			